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Worcester Commuter Rail Extension Project

EOEA No. 9154

FINAL Environmental Impact Report

Railroad Right-of-Way and Layover Facility

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Submitted to:
Executive Office of Environmental Affairs
MEPA Unit

Submitted by:
Massachusetts Bay Transportation Authority

July 1995

Worcester Commuter Rail Extension Project

FINAL ENVIRONMENTAL IMPACT REPORT

RAILROAD RIGHT-OF-WAY AND LAYOVER FACILITY

EOEA No. 9154

Commonwealth of Massachusetts

William F. Weld
Governor

Argeo Paul Cellucci
Lieutenant Governor

James J. Kerasiotes
Secretary and MBTA Chairman

Robert L. Mabardy
MBTA Interim General Manager

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EXECUTIVE SUMMARY

Introduction

The Massachusetts Bay Transportation Authority (MBTA) proposes to restore the Worcester-Boston commuter rail service discontinued in 1975 ("the Worcester Extension project" or "the project"). In August 1992, the MBTA submitted to the Secretary of Environmental Affairs ("the Secretary"), under various provisions of the regulations for the Massachusetts Environmental Policy Act (MEPA) which she administers, an Environmental Notification Form (ENF) on the Worcester Extension project. A project's ENF is the basis on which the Secretary determines whether it requires further environmental review. In October 1992, the Secretary determined that the project required an Environmental Impact Report (EIR), a full study of the project's impacts and of mitigation for those impacts. That same month, the MBTA agreed that the project would be reviewed under MEPA as a Major and Complicated project, with a Special Procedure for the MEPA review. The Special Procedure contemplated a comprehensive Draft EIR (DEIR) on the whole project, at about a 30% design stage, and then either a single Final EIR (FEIR) on the project, or FEIRs on various project elements, all FEIRs to be at about a 60% design stage. The Special Procedure established a Citizens Advisory Committee (CAC) to assist the Secretary with the project's MEPA review. The MBTA has, in accordance with the provisions of the Special Procedure, recently submitted a Notice of Project Change to develop two separate FEIRs on the Project: the first to include a comprehensive review of the impacts associated with the Railroad Right-of-Way (track and signal work) and Layover Facility; the second, a review of Commuter Rail Stations and Railroad Operations. The Secretary concurred with this approach in the Certificate on the Notice of Project Change dated June 22, 1995.

What follows is an Executive Summary of the MBTA's Worcester Extension Project FEIR for Track and Layover. It includes a summary of previously submitted analyses concerning stations and operations which will be revisited in the second FEIR. This first FEIR will go through a period of public comment, after which the Secretary will determine its adequacy. If this FEIR is determined to be adequate, the second FEIR on the project will then follow, in accordance with the Special Procedure, in late 1995.

Project Background

The overall project supports two interrelated public policy goals, reducing traffic congestion on the Massachusetts Turnpike (I-90) and in downtown Boston and improving air quality for the Boston metropolitan region.

Traffic congestion has been a complicated public policy question for the Boston metropolitan area for decades, as it has been for most American cities. The same causes underlie this question for all older cities like Boston: increasing automobile use per capita; residential suburbanization; and the continued viability of the downtown business core as a preferred employment location for the myriad of specialized services needed by the entire metropolitan area. The same solution has been tried in most cities: expanded center-suburb highway capacity. Locally, this solution is reflected in the 1948 Master Highway Plan for the Boston Metropolitan Area, which became, for the next 20 years, the work plan on the basis of which much of the center-suburb roadway capacity now in place in metropolitan Boston was put in place. By the late 1960s, however, the limits of this solution were becoming clear. Citizen activists and progressive transportation experts increasingly opposed the landtakings and neighborhood disruption new center-suburb highway capacity would entail, particularly since the demand for that new capacity appeared, from the perspective of the times, insatiable.

On the basis of the technical conclusions of the Boston Transportation Planning Review in the early 1970s and the continued political pressure from activists opposing highways, Governor Francis Sargent began the forging of new transportation priorities for metropolitan Boston based on improved public transportation. The planning, construction and operation of this revitalized system has been the job of the metropolitan Boston area's public transportation manager, the MBTA. Federal initiatives have complemented the state's initiatives, most recently the Intermodal Surface Transportation Efficiency Act (ISTEA) enacted in 1991. A relatively brief surge in federal transit assistance was enjoyed by the states in the 1970s as well. Since the early 1970s, a number of important new MBTA projects have been placed in operation to serve downtown Boston, both from within the city and from its inner suburbs inside Route 128, and from the outer suburbs beyond Route 128 as well. All the new service for downtown Boston from the outer suburbs involved revitalizing existing commuter rail lines and, later, extending these lines out to the expanding edge of the Boston employment market. The Worcester Extension project is part of this program, which also includes, among others, service extensions to Newburyport on the North Shore and to several locations on the South Shore using restored Old Colony corridors. With the completion of the Worcester, Newburyport, and South Shore commuter rail projects, the MBTA's extension program

will be largely completed. Figure ES-1 shows all the MBTA's existing and planned commuter rail lines, including the Worcester Extension project.

While center-suburb traffic management was one driving force behind the vast program of MBTA public transportation improvements now nearing completion, air quality in the Boston metropolitan area also is an important concern. This is particularly the case since passage of the 1990 amendments to the Clean Air Act. The 1990 Clean Air Act amendments placed all the states whose ambient air quality did not meet federal standards in 1990 on strict timelines, longer for states with more serious problems, for meeting and thereafter maintaining those standards. By 2007 California, the only state with what the 1990 amendments classified as "extreme" air quality problems, must comply with all the federal standards. Massachusetts, whose problems are classified as "serious," must comply by 1999. The chief Massachusetts problem is ozone, whose precursors, volatile organic compounds (VOCs) and oxides of nitrogen (NO_x), must be reduced about 25% from present levels of in-state generation. The penalties for non-compliance include possible loss of federal highway funds and reclassification into the next highest category of Clean Air Act air quality, "severe." Reclassification under the 1990 amendments would impose additional air quality control burdens that could constrain economic development in Massachusetts seriously.

Massachusetts' air has been getting cleaner for the past 15 years. But as the traditional target of clean air strategists, "stationary sources" of air pollution like industrial smokestacks or electric power plants, have either reduced emissions because of improved control technologies or gone away because of economic changes, increased attention has been given to "mobile sources," chiefly automobiles, as a major source of air contaminants. For even as individual new automobiles, because of the effect of more stringent federal standards, operate with fewer and less toxic emissions, there are more cars on the road than ever before, and the average annual mileage driven per car is rising. In metropolitan Boston, several factors are behind this expanded automobile use. These include continued residential suburbanization, to the areas between Route 128 and I-495 and now even beyond; a newer phenomenon of increasing employment growth outside downtown Boston at major highway intersections and interchanges; and, perhaps undergirding these both, dramatic new wealth: between 1970 and 1990 Massachusetts, per capita, went from being among the poorer to among the richest of the U.S. industrial states. Together, those factors threaten the ability of Massachusetts to achieve and maintain the National Ambient Air Quality Standards.

MBTA Commuter Rail System Extensions

* Greenbush Branch under study.

Massachusetts Bay Transportation Authority

COMMUTER RAIL LINES

FIGURE ES-1

Massachusetts Bay Transportation Authority

William F. Weld, Governor | Argeo Paul Cellucci, Lieutenant Governor | James J. Kerasiotes, Secretary and MBTA Chairman | Robert L. Mabardy, Interim General Manager

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August 3, 1995

Re: Worcester Commuter Rail Extension Project
EOEA #9154

Dear Reviewer:

Attached for your review and approval is the Final Environmental Impact Report (FEIR) for the Worcester Commuter Rail Extension Project. Comments are currently being accepted by Massachusetts Environmental Policy Act until September 7, 1995.

The Massachusetts Bay Transportation Authority plans to develop an extension of the Framingham Line to Worcester with five intermediate sites (Ashland, Southborough, Westborough, Grafton and Millbury). This FEIR examines the environmental impacts of the layover facility in Worcester and the additional track required. As part of the special procedure established in the Certificate on the Environmental Notification Form, a Citizens Advisory Committee (CAC) was established to review this document prior to its submittal. The CAC's comments are contained within this document.

The second FEIR, the splitting of which is consistent with Secretary of the Executive Office of Environmental Affairs' Major and Complicated designation for this project, will examine environmental impacts at stations as well as the impacts of operations. That FEIR will be filed by the end of this calendar year.

Thank you for your interest with this project. Should you have any questions, do not hesitate to contact me.

Sincerely,

Andrew D. Brennan
Manager of Environmental Affairs

ADB/gk

Attachment

Massachusetts Bay Transportation Authority, Ten Park Plaza, Boston, MA 02116-3974

Every state under a Clean Air Act timeline must have a plan, called a State Implementation Plan or SIP, for timely meeting the federal standards. The plan represents that state's allocation of the relative burdens of further improvements in air quality. Because so much progress already has been made in Massachusetts in making stationary sources cleaner, much of the remaining burden of meeting the 1999 deadline will fall on mobile sources. And while mandatory federal auto emission standards, along with the Commonwealth's decision to adopt even tougher voluntary low emission vehicle standards, will mean increasingly cleaner cars on the state's roadways, only by limiting the growth in overall auto travel can Massachusetts ensure that it will achieve and maintain clean air standards. A clear means to this reduction is an efficient public transportation system. And so the Massachusetts SIP contains extensive commitments to keep operating virtually all existing MBTA services and to start operating several additional MBTA services in Boston itself and throughout the metropolitan area. Among the planned services included in the SIP are the unfinished commuter rail projects just discussed, including the Worcester Extension project, which is to be operational by December 31, 1996, unless infeasible due to adverse engineering, environmental, or economic impact.

Thus, the MBTA's rebuilding of metropolitan Boston's public transportation system, which began in the 1970s as an alternative to road building for combating traffic congestion, is nearing completion in the 1990s with another central goal to serve: helping Massachusetts to meet federal air quality standards by 1999, and to maintain them thereafter. The Worcester Extension project will serve both goals.

Project Need

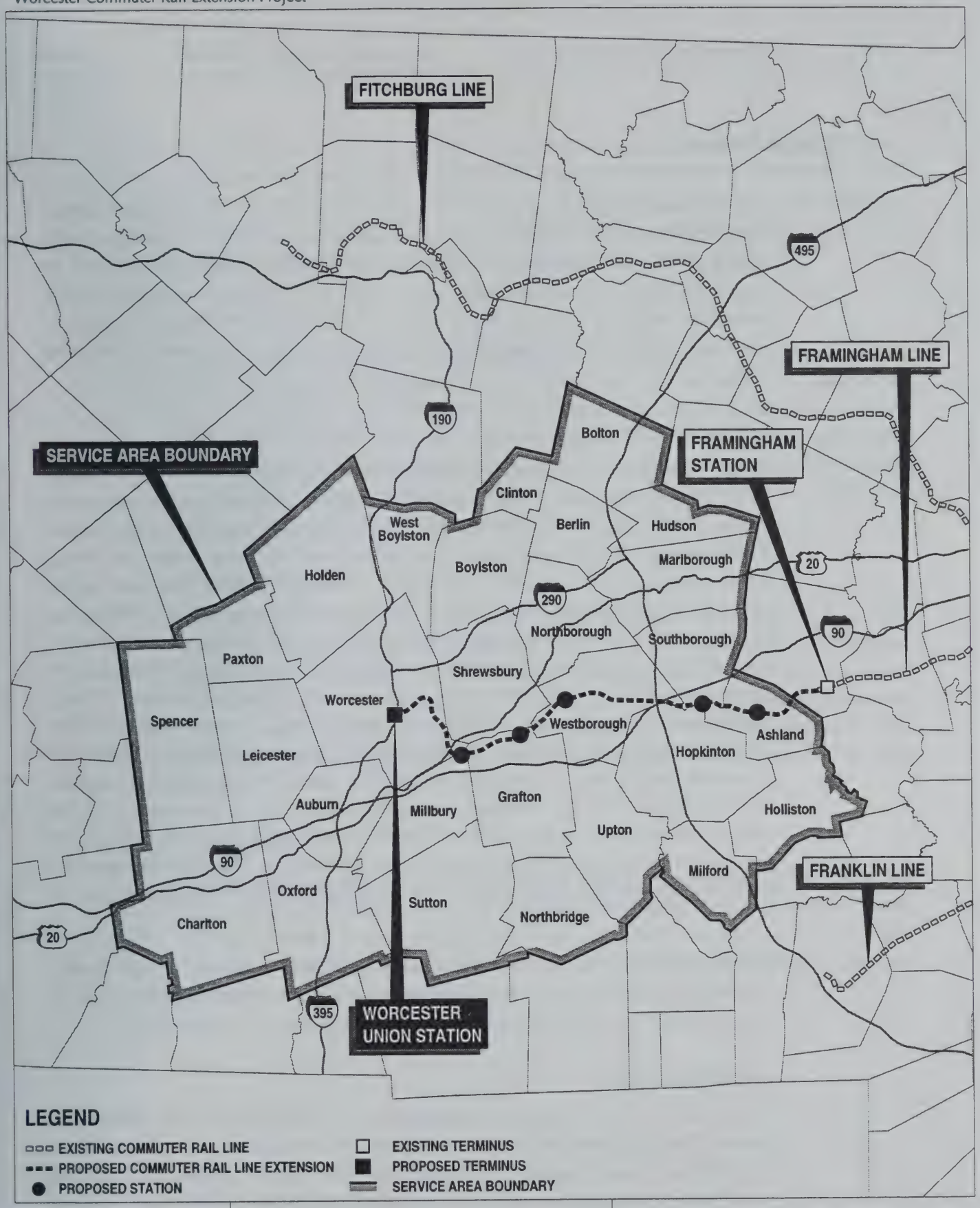
The Worcester Extension project will play an important part of the Commonwealth's overall strategy for reducing traffic congestion in downtown Boston and improving air quality for the Boston metropolitan region by providing a reliable public transportation alternative to the rapidly growing number of commuters to Boston from communities west of Boston near and beyond I-495 whose numbers will increasingly test the capacity of existing radial highways carrying commuters to and from Boston, especially the Massachusetts Turnpike.

Local rail service between Worcester and Boston ran continuously between 1835 and 1975, and freight and intercity passenger service runs to this day. Particularly after World War II, increasingly widespread automobile use led to increasing suburbanization, and to an extensive highway building program in the Boston metropolitan area, as throughout the Nation. The chief elements of Boston's existing rim-and-spoke highway system began

with the construction of Massachusetts Route 128 (now also, in large part, I-95) in the mid-1950s and were in place by the mid-1960s with the completion of the Massachusetts Turnpike Extension from Weston to Boston. Increasingly easy automobile travel to downtown Boston, eased in part by an increasing shift of overall employment to locations outside Boston, led to widespread declines, throughout Boston as throughout most of the Nation's metropolitan areas, in commuter rail usage, and to declines as well of existing railbeds, stations, rolling stock and equipment.

Nonetheless, the continued movement of population out of Boston proper has not been matched by a decline in employment in the downtown Boston area. Instead, employment in downtown Boston has continued to grow strongly and is expected to continue to grow steadily in the coming decades. It is the interaction between these two phenomena--continued residential suburbanization and continued strong job growth in downtown Boston--that is the driving force behind the Worcester Extension project and MBTA extension projects to Newburyport and the South Shore. The demographics, which by 1975 had led to low patronage for Worcester/Boston commuter rail service, have changed dramatically less than 20 years later.

The MBTA estimates that patrons for the Worcester Extension service will be drawn from towns whose centroids are approximately six miles or fewer from the rail line, and from not much beyond ten miles from the rail line. This comprises 28 communities, illustrated on Figure ES-2, which the MBTA projects will form the core service area for the Worcester Extension project. In these 28 communities, population increased only 8 per cent between 1980 and 1990, but the work force has grown 23 per cent, and work trips to Boston proper and to Cambridge have increased, respectively, 72 per cent and 151 per cent. Large real increases between 1980 and 1990 are involved, moreover. Altogether, the 28 service area communities generated just over 6,000 work trips to the Boston area in 1980, and some 11,000 work trips in 1990. The Worcester Extension project aims to capture approximately 2,100 riders in 1996, 2,300 riders in 2001, 2,500 riders in 2006, and 2,700 riders in 2011.



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 6 Miles

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PROJECT SERVICE AREA

FIGURE ES-2

Project Elements

The Worcester Extension project will comprise four key physical elements: corridor upgrading or track improvement; up to five intermediate stations; a layover facility for staging morning inbound trains; and an interim Worcester station. Service may be expanded if sufficient demand materializes. This FEIR addresses only those issues associated with Track improvements and the Layover facility. Issues pertaining to Stations, including the Worcester Station, and Operations will be addressed in a second FEIR.

Corridor Upgrading

Existing commuter service between Boston and Framingham operates on tracks owned by the MBTA. (Conrail also uses these tracks.) The new Worcester service will operate on the Conrail mainline between Framingham and Worcester. Significant improvements on this mainline will be needed to accommodate both existing Conrail freight and Amtrak intercity service and the new Worcester service. About four miles of eastbound track in Worcester will need upgrading. Currently, this section of track is used as siding/storage track by Conrail. Recently, the need to replace this storage capacity was identified by Conrail. The replacement will be accomplished by the construction of 1.4 miles of new siding along the main line immediately west of Union Station in Worcester. Though double tracks will need to be restored over about seven miles through Millbury, Grafton and Westborough, the roadbed is generally in adequate condition to allow this restoration. Additional track and signal work will be undertaken throughout the corridor to allow 70 mile per hour passenger train operations. As part of the project, a 21 foot vertical clearance to allow for passage of Conrail's double-stack containers is a goal. The goal will be achieved over the seven mile stretch noted above. Clearance improvements at six bridges between Framingham and Westborough will be the responsibility of the EOTC.

Four bridges--at Hamilton Street in Worcester, at Pine Street in Grafton, at High Street in Ashland, and at Fountain Street in Framingham--are anticipated to be replaced by the Massachusetts Highway Department and will be coordinated with this project.

Intermediate Stations

The MBTA's ridership estimates have assumed the construction of five intermediate stations. The DEIR proposed stations for Millbury, off either Route 122 opposite Exit 11 of the Massachusetts Turnpike or off Route 20 in Worcester; for Grafton, off Pine Street near Route 30; for Westborough, off Smith Valve Parkway; for Southborough, at Route 85 and Southville Road; and for Ashland, either off Pleasant Street and Route 135, or off

High Street and Route 135. The MBTA continues to evaluate issues surrounding station siting and will present the results of this evaluation in the second FEIR. The MBTA maintains its commitment to construct only intermediate stations that receive the host community's approval. A separate Regional Station Feasibility Study currently is underway. The results of this Study will be incorporated into the second FEIR.

Layover Facility

The proposed layover facility is an existing railyard in Worcester. It is proposed for the outer terminus of the Worcester line, near where trains will end each day's service and will be needed to begin each day's service. (Trains originating in Boston would provide morning service to Worcester.) The proposed layover facility can accommodate four train sets with necessary support facilities. Wayside power will be provided to limit the amount of locomotive idling required, particularly during cold weather. This site is located in an active rail area with primarily non-sensitive adjacent land uses.

Worcester Station

The existing Amtrak station in downtown Worcester, north of the railroad tracks, has been modified and expanded so as also to serve as an interim station. Eventually, Worcester passengers will use a redeveloped Union Station, about 700 feet west of the Amtrak station. The redevelopment of Union Station, jointly by the Worcester Regional Transit Authority and the Worcester Redevelopment Authority, has undergone separate MEPA review under EOEA #9521. Union Station's opening currently is planned for early 1998.

Operations

The MBTA began interim Worcester Extension service, express between Worcester and Framingham, on September 26, 1994. Service is weekdays only, three trains inbound during the morning commute and three trains outbound during the evening commute. The MBTA continues to monitor the train service and will use the information as input to future service.

Project Alternatives

Overall Alternatives

In addition to "No Build," which forms the standard environmental baseline against which a project's impacts are assessed, the MBTA, in its DEIR, considered the public transit alternative of express bus service designed to be roughly equivalent to the project's service for its projected ridership. The key comparisons were around air quality impacts and costs, capital and operating. This FEIR addresses the economic impact of the Worcester Extension Project and demonstrates the Project's financial feasibility for the overall MEPA review.

Project Socio-Economic Impacts

In its DEIR, the MBTA has reviewed several concerns expressed by observers about the Worcester Extension project's possible socio-economic impacts. Among these have been land use impacts in the service area, impacts on local revenues and local property values in communities with stations, and changes in existing MBTA assessments or their possible imposition on service area communities not now in the MBTA district. In general, the Worcester Extension project is not expected to have a significant impact on any of these areas of concern. The MBTA continues to evaluate socio-economic issues and will present appropriate updates in the second FEIR.

Project Environmental Impacts and Mitigation

In its DEIR, the MBTA comprehensively analyzed all the project elements in the following impact areas: traffic; air quality; noise and vibration; site drainage; wetlands and wildlife; historic sites; archaeological resources; visual impacts; hazardous materials; pedestrian safety; and construction. In this FEIR, corridor impacts analyzed do not extend to impacts from any station area, which will be further analyzed in the second FEIR for stations. With the exception of impacts related to the corridor and the layover facility, all additional impact areas will be revisited in the second FEIR on stations and operations.

MEPA requires that the impacts from projects, whether public or private, be identified, minimized, and mitigated where feasible and where the project is the cause of unacceptable impacts. Not all impacts from a project require mitigation. The MBTA understands there are various local proposals for mitigation, but emphasizes that, since

the Worcester Extension project is itself a required air quality mitigation measure under the Massachusetts SIP, its mitigation should be as focussed as possible on setting off impacts clearly traceable to the project.

The MBTA continues to evaluate mitigation associated with the operations of the Worcester Extension Project as well as the construction and use of the proposed intermediate stations. In this FEIR, corridor impacts associated with vibration, wetland/wildlife, drainage, historic sites, archaeological resources, and construction impacts for both the layover facility and the corridor improvements are addressed.

Noise/Vibration

Possible vibration impacts from operation of the commuter rail service have been re-evaluated. Additional field measurements were performed along the corridor to determine the effects of interim service trains. The results of the additional analyses and review of more detailed corridor maps indicate that 19 residences could be affected by vibration from MBTA commuter trains. With the exception of one multi-family unit, all potentially affected properties are isolated, single family residences. Projected vibration is well below the level that could result in structural damage.

At the layover facility, operations would result in a minor increase in noise levels (1 dBA or less). The provision of electrical plug-in power sources at the layover eliminates the need for over-night idling of locomotives and thereby eliminates most potential noise impacts. Therefore, no significant impact will occur and no additional mitigation is proposed.

Drainage

The proposed replacement of the second track over the seven mile stretch from Westborough to Worcester will include regrading of the trackbed, regrading of ditches, installing subdrains and storm drains, and making adjustments to existing culverts. Overall drainage impacts are relatively minor, with mitigation built into the design.

Wetlands/Wildlife

There will be minimal wetland impacts associated with the replacement of the second track between Milepost (MP) 33.2 and MP 40.3. In areas where embankment widening or regrading are adjacent to wetland resources, ballast retaining walls will be constructed and erosion control barriers installed to avoid impacts to those wetlands. Wildlife movements may be impacted by the installation of new fencing. The project proposes new fencing only where considered a necessity for public safety.

Historic Sites

An architectural survey was conducted along the railroad right-of-way. The survey forms for more than 170 structures were prepared and submitted to the MHC. In addition, forms were submitted for 26 bridges. Potential impacts will be visual only and are considered minimal. There is no proposed mitigation.

Archaeological Resources

A reconnaissance archaeological survey identified several possible archaeological resource sites along the corridor. An intensive archaeological survey, including test pits, is in process. If intact archaeological resources, particularly in previously undisturbed areas, are identified all appropriate measures will be employed during construction to comply with MHC regulations.

Construction

Track work and Layover construction will be managed with standard construction mitigation techniques, including hay bales to control stormwater flow, site watering to minimize dust, use of quietest available equipment, limiting equipment idling, using temporary noise barriers, restricting hours of operation, etc. Specific construction noise limits will be developed and incorporated into contract specifications, along with noise monitoring requirements to ensure compliance.

Public Participation

The MBTA has, for some time, been consulting with the rail committees constituted by the Board of Selectmen in each town (other than Grafton, whose Board of Selectmen remained directly involved in the station site selection process) to assess station locations and recommend a preferred location. Periodically, the MBTA and its project consultants have met with these committees to bring new information about the project analyses underway, or to field questions about project concerns that had surfaced in each locality where a new intermediate station was planned. The MBTA has found these meetings uniformly valuable.

As part of the Special Procedure created for the review of the Worcester Extension project, the Secretary created a Citizens Advisory Committee (CAC). Each local rail committee has a CAC member and others were chosen after a nomination process conducted by the Secretary. The CAC membership has recently been expanded to include representation from Hopkinton and Framingham. The CAC has an overview role

with respect to the project, and also certain rights under the MEPA regulations, including the right to 30 days' advance review of the FEIR, the right to request changes in the FEIRs, and the right to have its comments circulated with the FEIRs if timely filed with MEPA. The MBTA has met periodically with the CAC and has gained valuable insights about the project from CAC members.

The CAC's comments on the DEIR appear in the Appendix at the end of this volume and to the extent practical, these comments have been incorporated into the text of this Track and Layover FEIR.

FEIR CIRCULATION LIST

Federal

Department of the Army
  Corps of Engineers, New England Division
Department of the Interior
  Fish and Wildlife Service, N.E. Region
Environmental Protection Agency
  Region 1, Environmental Review Office

State

Executive Office of Communities and Development
  State Clearinghouse
Executive Office of Consumer Affairs
  Department of Public Utilities
Executive Office for Environmental Affairs
  Department of Environmental Management
    Division of Resource Conservation (Inland ACEC Program)
  Department of Environmental Protection, Boston Office
    Division of Waste Site Cleanup
    Division of Watershed Protection
  Department of Environmental Protection, Central Regional Office
    Division of Wetlands and Waterways
  Department of Environmental Protection, Northeast Regional Office
    Division of Wetlands and Waterways
    Division of Water Pollution Control
  Department of Fisheries and Wildlife and Env. Law Enforcement
    Division of Fisheries and Wildlife
    Massachusetts Natural Heritage Program
  Department of Food and Agriculture, Lancaster Regional Office
    Bureau of Land Use
Executive Office for Transportation and Construction
Massachusetts Highway Department, Boston Office
Massachusetts Highway Department, District #3
Massachusetts Historical Commission
Massachusetts Architectural Access Board

State (cont.)

Massachusetts Water Resources Authority
State Transportation Library

Elected Officials

U.S. Congressman Peter Blute
State Senator Matthew J. Amorello
State Senator Arthur E. Chase
State Senator Robert A. Durand
State Senator David P. Magnani
State Senator Robert D. Wetmore
State Representative John J. Binienda
State Representative Stephen M. Brewer
State Representative Harriette L. Chandler
State Representative William Constantino, Jr.
State Representative Barbara Gardner
State Representative William J. Glodis, Jr.
State Representative Emile J. Goguen
State Representative Barbara Gray
State Representative Paul Kollios
State Representative William J. McManus, II
State Representative Kevin O'Sullivan
State Representative Vincent A. Pedone
State Representative Marsha R. Platt
State Representative John A. Stefanini

Regional Agencies

Central Massachusetts Regional Planning Commission
Metropolitan Area Planning Council
Worcester Regional Transit Authority

City of Boston

Environment Department
Transportation Department
Redevelopment Authority
Public Library

City of Worcester

Mayor's Office
City Manager
City Council
Conservation Commission
Planning Board
Office of Planning and Community Development
Department of Traffic Engineering
Redevelopment Authority
Public Library

Town of Millbury

Board of Selectmen
Commuter Rail Study Committee
Conservation Commission
Planning Board
Public Library

Town of Grafton

Board of Selectmen
Conservation Commission
Planning Board
Grafton Water District
Commuter Rail Study Committee
Public Library

Town of Westborough

Board of Selectmen
Commuter Rail Study Committee
Conservation Commission
Historical Commission
Planning Board
Recreation Department
Town Engineer
School Committee
Town Coordinator
Police Department
Public Library

Town of Southborough

Board of Selectmen
Commuter Rail Study Committee
Conservation Commission
Planning Board
Public Library

Town of Ashland

Board of Selectmen
Conservation Commission
Planning Board
Commuter Rail Study Committee
Town Manager
Town Planner
Public Library

Town of Framingham

Board of Selectmen
Conservation Commission
Planning Department
Public Library

Town of Hopkinton

Board of Selectmen
Conservation Commission
Planning Board
Public Library

Town of Wellesley

Board of Selectmen

City of Newton

Department of Planning and Development

Citizens Advisory Committee

Mr. David C. Robbins, Chairman
Mr. Ed Bates
Mr. Robert Gentile
Mr. Dex Malone
Ms. Kathleen Bartolini
Ms. Patricia Murphy-Capone
Mr. James W. Falconi
Mr. Wayne Thies
Mr. Stephen Doret
Ms. Judith McCabe
Mr. Michael O'Bryan
Mr. James R. Waterman
Ms. Lydia Bogar
Mr. John A. Reil
Mr. Edward J. Ropiak
Ms. Margaret A. Lavallee
Mr. Frederick Moseley
Senator Matthew J. Amorello
Ms. Patricia E. Austin
Mr. Peter Stanton
Mr. George Tetler
Mr. Jeffery Dore
Mr. Stephen Bishop
Mr. Karl Gross
Ms. Mary MacAdam
Ms. Jody Young
Mr. David S. Goldman
Mr. Andrew Boyce
Mr. David Holbrook

Private Groups/Others

Massachusetts Audubon Society
Metrowest Growth Management Committee
Massachusetts Restaurant Association
Bicycle Coalition of Massachusetts
Preservation Worcester

Private Groups/Others (cont.)

Union Station Alliance
Worcester Area Chamber of Commerce
Worcester Business Development Corp.
Tufts University School of Veterinary Medicine
Worcester Telegram and Gazette
Conrail
Peter Pan Bus Lines, Inc.
Cavalier Coach Corporation
Gulbankian Bus Lines
MBTA Advisory Board
MASCO
Association for Public Transportation, Inc.
Joint Regional Transportation Committee
People for Ashland West Alternative
William and Helen Panas
Joseph Orlando
Louis and Maureen Jankauskas
Robert, Barbara, and Marie Brais
Lawrence Gomes
Cheryl and Paul Crivello
Dorothy McMahon
Elizabeth Colbert
Andrew & Teresa Boyce
Scott Rossiter
John Woodward
Andrew B. O'Donnell
Brennan F. Wall
Mary Fisher
Mary Cullen
Stephen & Charlene Henry
Brian & Antoinette Kennedy
Mario Avelloni
E. Thomas & Judith McCabe
Sally Tajiani
Janice & Allen Silvestry
Rosemary Johnson
Diane Power
Dennis Cox
Jacqueline & David Cox
Dorothea MacLeod
Marvin Silver
Barbara Reismann
Julia M. Jacobs
Jackie Adams

Private Groups/Others (cont.)

Keith Davison
Ellen Giargiari
Claudia Lefter (etal)
Claudia Lefter (for Holdens)
Nelson Holden
Daniel Giargiari (Burnam's Rest.)
Judith & Thomas Little
William & Mary Anne Coveney
Jane & Richard Dunphy
Joseph Harrington
Mrs. Paul Smith
William Murphy
Jennifer Speed
Bruce Johnson
Susan Stager
Ellen Gugel
Barbara Sullivan & Fran Lynch
Richard Fournier, Jr.
James Knowles
Peter Venuto
Patricia Pirozzi
James Waddell
Russell Fustino
Jane Fedorowicz & Michael Golibersuch
Anne Huff

SECTION 1.0 PROJECT OVERVIEW

Introduction

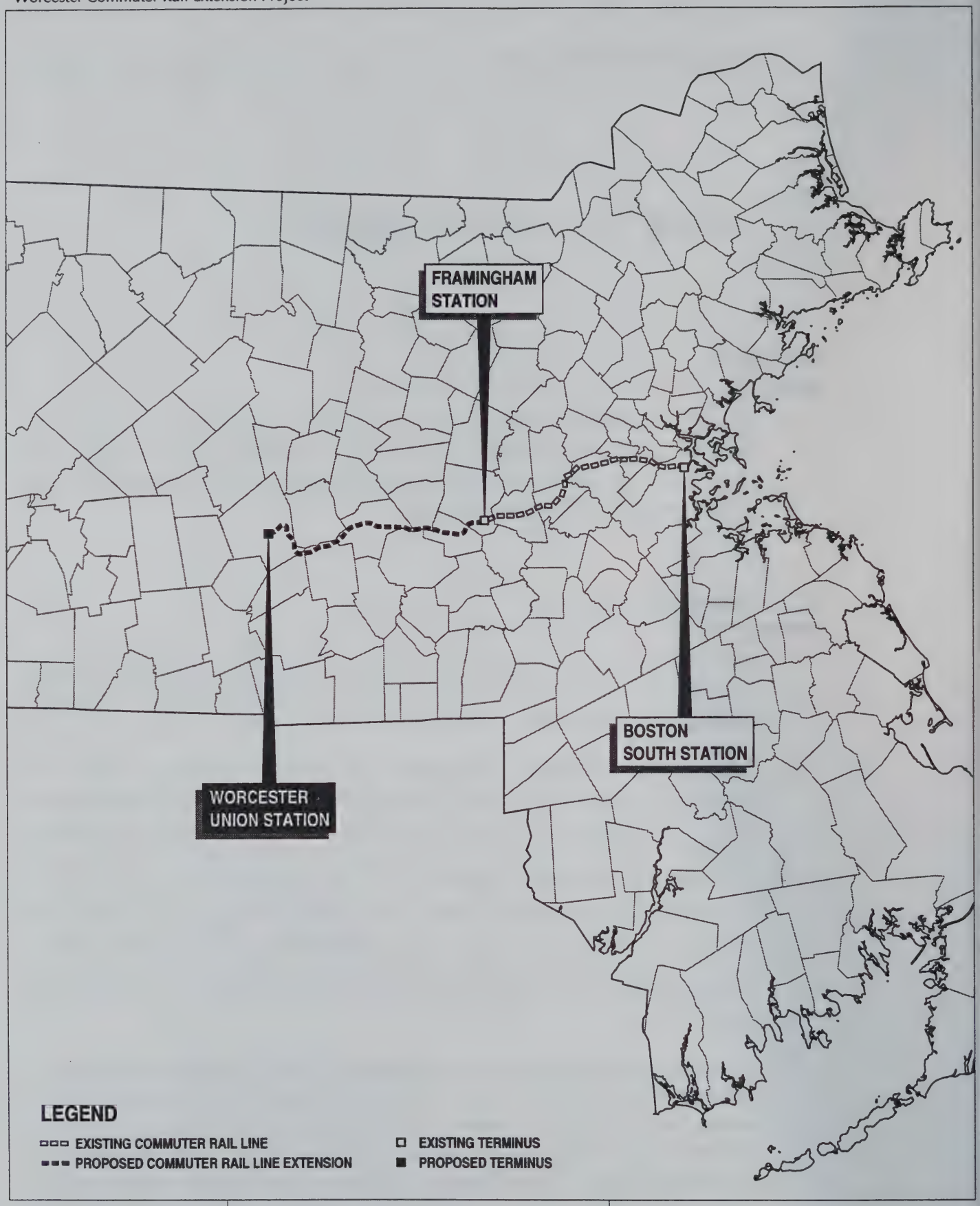
This section provides a brief summary of the proposed project elements (described in detail in Section 3.0), a history of the project, including MEPA chronology and coordination with project area communities, and concludes with a discussion of the permits and approvals likely to be needed.

1.1 Proposed Project

This Final Environmental Impact Report addresses the proposed extension of MBTA Commuter Rail Service on the Framingham Line from its present terminus at Framingham Station to a proposed terminus in downtown Worcester (see Figure 1.1-1).

The existing rail line between Framingham and Worcester is owned by Conrail. The proposed commuter rail service will share operations on the line with existing Conrail freight and intercity passenger service by Amtrak. The total number of train operations requires restoration of double track over the westerly 11 miles of the project between Westborough and Worcester, along with overall upgrading of track and signals to permit 70 mph speeds for the project's trains. Trackage upgrades will consist of some seven miles of new second track and four miles of upgraded second track. Conrail uses a section of the existing second track in Worcester for a storage track. To replace this capacity, a new 1.4 mile third track will be constructed along the mainline west of Union Station.

The proposed service was initiated on September 26, 1994 by operating "interim" service consisting of three peak hour trains during both the morning and evening commute, running express between Worcester and Framingham. Union Station in Worcester, currently being designed for use as an intermodal transportation facility, is expected to be re-opened in early 1998. While this site will be the ultimate commuter rail terminus, a temporary station facility was constructed at the present Amtrak station in Worcester to serve as an interim station until the Union Station project is complete.



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 12 Miles

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LOCUS MAP

FIGURE 1.1-1

The project proposes construction of intermediate commuter rail stations along the corridor in Millbury, Grafton, Westborough, Southborough, and Ashland (see Figure 1.1-2). Stations will include inbound and outbound platforms, grade separated pedestrian crossovers of the tracks, platform canopies and wind breaks. Parking for commuters will be provided at each station, with lot size determined by demand for parking spaces. It is anticipated that the intermediate stations will be constructed by 1996, when train operations will be increased to four peak hour trains in the A.M. period and five peak hour trains in the P.M. period, plus off peak service, totaling 20 trains per day (Basic Service).

In addition to the proposed intermediate stations, a regional station was investigated to be located in the vicinity of the rail line crossing of I-495 just north of the existing I-90/I-495 interchange. In consideration of the environmental concerns, high cost of constructing access and long lead time for design and environmental permitting, a regional station is not proposed as part of this project. A Regional Station study, called for in the 1994 Transportation Bond Bill passed by the Massachusetts Legislature, is underway. The results of that study will be reported in the FEIR for Commuter Rail Stations and Railroad Operations.

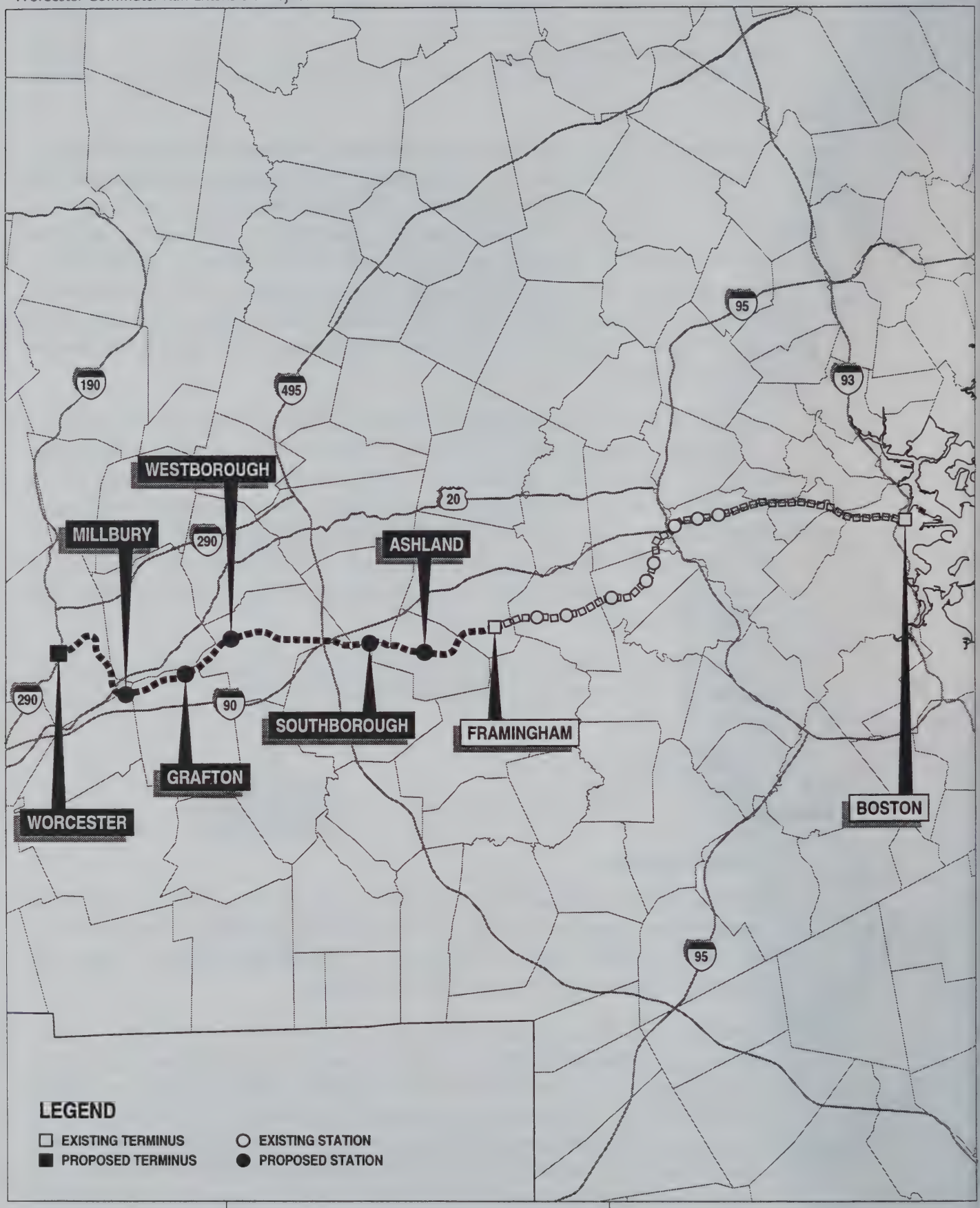
Commuter rail ridership is expected to be drawn primarily from 28 communities in the Boston Metrowest and Greater Worcester areas (see Figure 1.1-3).

1.2 History of Project

Project Background

The Worcester Commuter Rail Extension Project has evolved and taken shape as an integral part of regional transportation and environmental initiatives. As described below, the project is one of a number of proposed public transportation projects with short and long term regional transportation and air quality benefits.

During the late 1970s and early 1980s, the Commonwealth made substantial capital investments in mass transportation corridors in the metro-Boston region, e.g., the Red Line Extensions (north and south) and the Southwest Corridor (Orange line) Project. Simultaneously, the Commonwealth was engaged in planning the Central Artery/Tunnel Project to complete the Interstate Highway system in Massachusetts and to improve the capacity and safety of existing highway facilities. The environmental review of the Central Artery/Tunnel Project undertaken between 1987 and 1991 refocused the attention of state officials on the relationship between transportation systems and air quality and the role of mass transportation in a balanced transportation system. The ensuing debate produced



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 6 Miles

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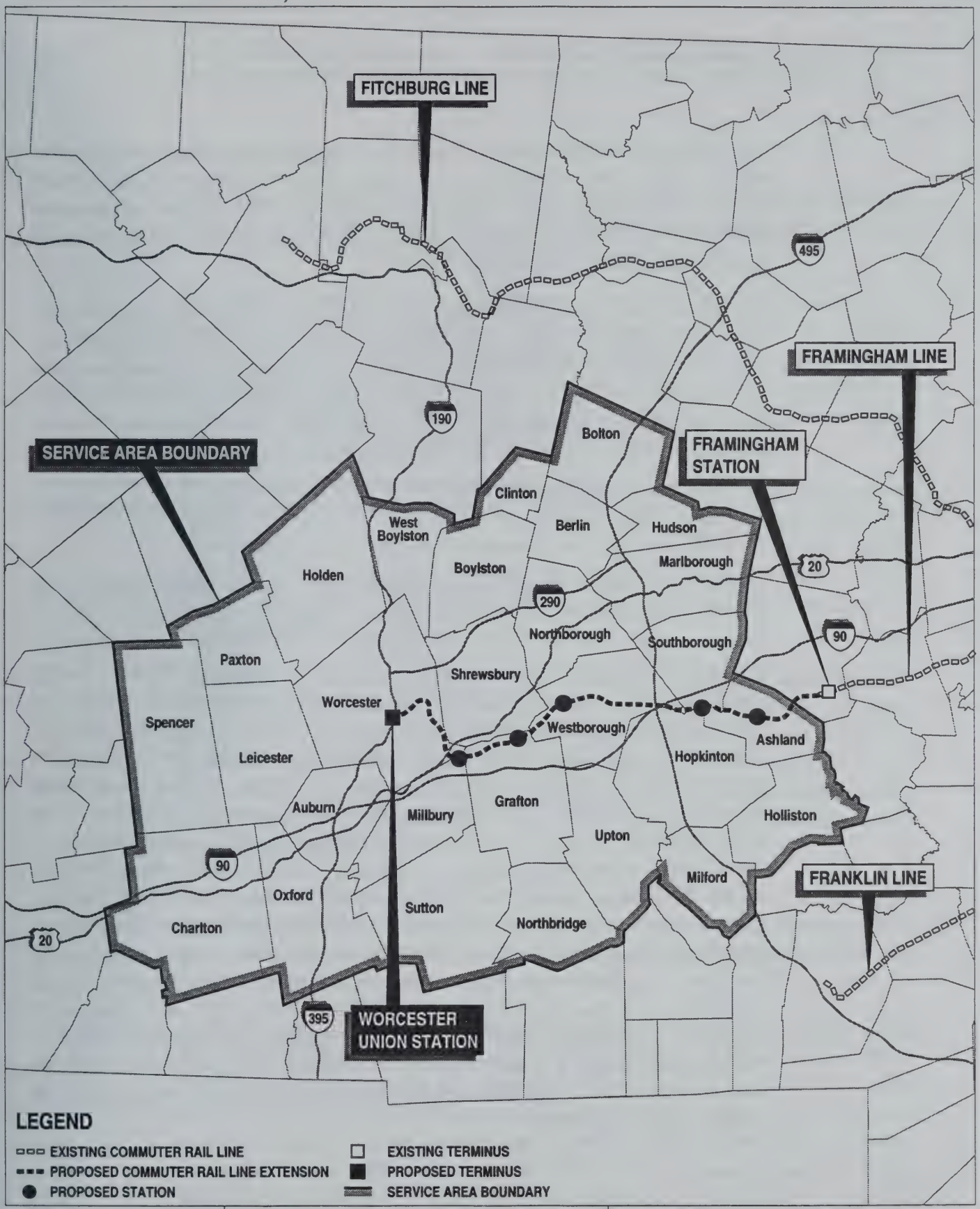
PROJECT CORRIDOR

FIGURE 1.1-2



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 6 Miles

0 6

PROJECT SERVICE AREA

FIGURE 1.1-3

convincing evidence that highway infrastructure improvements, despite their beneficial effects, must be accompanied by transportation demand management and demand reduction designed to achieve successful functioning of the regional transportation system as a whole and to minimize future growth in traffic volumes seeking to use the region's necessarily limited highway capacity.

New federal air quality mandates, particularly the 1990 Federal Clean Air Act Amendments discussed below, highlighted the need to construct mass transportation improvements and to devise other transportation strategies to achieve compliance with the State Implementation Plan (SIP). The Central Artery/Tunnel Project (and other proposed highway improvements, such as the Route 146/Massachusetts Turnpike Interchange Project in Worcester and Millbury) served as the catalyst for discussion and formulation of a strategy to expand mass transportation capacity and to introduce new services to support existing capacity in tandem with other air quality improvement measures.

A key element of the Commonwealth's transportation and air quality strategy is the expansion and improvement of the commuter rail system. On September 27, 1990, the Secretary of the Executive Office of Transportation and Construction and the Secretary of Environmental Affairs endorsed the "Massachusetts Transportation Agenda" making improved mass transportation, including commuter rail expansion, among the Commonwealth's highest transportation priorities. Thereafter, the Executive Office of Transportation and Construction identified a range of specific mass transportation improvements and made commitments to pursue a program of mass transportation improvements and control measures to reduce low occupancy vehicles use. These commitments are reflected in the record of environmental review and approval of the Central Artery/Tunnel Project, see e.g., the Secretary of Environmental Affairs' Certificate on the Final Supplemental Environmental Impact Statement, the Federal Highway Administration's Record of Decision, and the Massachusetts Highway Department's Section 61 Finding pursuant to the Massachusetts Environmental Policy Act. Many of the proposed transportation improvements and control measures are the subject of state regulations, amendments to the State Implementation Plan (SIP), and other public approval processes which either are ongoing or completed. The Worcester Commuter Rail Extension project is a state regulatory requirement, 310 CMR 7.36 (2)(c)(2), an element in the current Massachusetts Transportation Improvement Program, and an enforceable provision of the SIP.

MEPA Chronology

The Environmental Notification Form (ENF) for the Worcester Commuter Rail Extension Project was submitted to the Secretary of Environmental Affairs on August 17, 1992 and was noticed in the Environmental Monitor dated August 24, 1992.

Following the comment period, the Secretary on October 8, 1992, issued a Certificate establishing a Special Procedure for a Major and Complicated Project. This certificate established a Citizens Advisory Committee (CAC) to assist the Secretary in the review and evaluation of the environmental impacts of the project. The certificate on the ENF was issued on October 22, 1992, defining the scope of issues to be addressed in the Environmental Impact Report (EIR) required on the project.

A Draft EIR was filed for the overall project and was noticed in the *Environmental Monitor* of August 8, 1993. Many thoughtful comments were received on the DEIR concerning a wide range of environmental and financial issues. Given the need for significant additional information identified in the comments, the MBTA determined that it was appropriate to withdraw the DEIR in order to address the comments in a substantially revised document.

Concurrent with the request that the DEIR be withdrawn, the MBTA filed a Notice of Project Change on November 29, 1993, that proposed an interim commuter rail service to Worcester. After careful evaluation of the proposed interim service and its potential impacts, and taking into account the comments received on the Notice of Project Change, the Secretary issued an opinion dated January 14, 1994, that the implementation of interim service would have limited environmental impact and could proceed without further review under MEPA.

The "new" Draft Environmental Impact Report was filed with MEPA and noticed in the *Environmental Monitor* on December 7, 1994. Following an extended comment period, the Secretary of Environmental Affairs issued a Certificate finding the Draft Environmental Impact Report to be adequate on March 16, 1995.

Under the Special Procedure established by Secretary for environmental review of this project, the MBTA proposed to prepare and submit separate and sequential Final EIR's - firstly, for track improvements and layover facility, and secondly, for construction of the intermediate commuter rail stations and implementation of rail service to those stations. A Notice of Project Change outlining this proposed processing of environmental review was submitted to MEPA on May 12, 1995, and subsequently noticed in the *Environmental Monitor* on May 23, 1995. A Certificate on the Notice of Project Change was issued on June 22, 1995, in which the Secretary concurred with this proposal.

Copies of MEPA documents relevant to this Final EIR are located in the Appendix section of this volume.

Coordination with Affected Communities

The MBTA's public participation process for the Worcester Commuter Rail Extension Project began in January 1992 as part of the schematic design phase. During January, February and March of 1992, the MBTA and its consultant met frequently with towns along the project corridor. Questions and concerns about the sites that were recommended in the 1990 Feasibility Study were identified and discussed. Three intermediate sites between Framingham and Worcester (Howe Street in Ashland, Fruit Street in Westborough and Pine Street in Grafton) had been were identified in the Feasibility Study. The Fruit Street site in Westborough and the Howe Street station site in Ashland were not popular sites with nearby residents and generated much discussion during these early public coordination meetings.

At the outset of the schematic design phase, it became clear that some of the stations identified in the Feasibility Study would not survive the more detailed engineering evaluation and public review that is undertaken during the schematic design phase. Issues of adequate access, land availability, and track geometry were among the obstacles that were identified during this early period of public participation. Therefore, the first element of the schematic design phase became the re-evaluation of potential station sites along the entire rail corridor.

During the station site identification process, most of the communities along the rail corridor between Framingham and Worcester established special citizen committees to study the issue of siting a station in their town. The initial public participation process focused on meeting with these committees or Boards of Selectmen of the towns along the corridor to explain the site selection criteria and re-assessment of the station sites identified in the Feasibility Study.

The Westborough Advisory Committee was appointed in August of 1991 by the Westborough Selectmen in anticipation of the MBTA extension project.

The Westborough Advisory Committee met several times before the MBTA started the schematic design phase in January 1992. The committee meetings were videotaped and broadcast on the local public access cable TV channel. Many of the meetings also were reported by the local newspaper. The committee initiated its own station site selection process and investigated several sites in Westborough. The committee expressed a preference for the Smith Valve Parkway site. Even so, recently the Advisory Committee and the Board of Selectmen have expressed concern about the local station location (the

Board recently voted that a local station is unacceptable) and stressed the need for further study of a regional station.

The Ashland MBTA Rail Committee was appointed by the Ashland Selectmen on March 16,1992. The committee prepared a report for the Selectmen titled *"Should There be a Commuter Rail Station in Ashland?"*. The report evaluated nine potential sites and recommended a site on Pleasant Street.

The Millbury Committee was appointed by the Millbury Board of Selectmen on September 8, 1992.

The Southborough MBTA Study Committee was appointed by the Southborough Board of Selectmen in April,1992.

The Town of Grafton participated in this coordination process through its Board of Selectmen.

The City of Worcester coordinated with the MBTA through the Worcester Area Chamber of Commerce and the Mayor's Office of Planning and Community Development. The MBTA will continue coordination of commuter rail issues with the Worcester Redevelopment Authority and Worcester Regional Transit Authority, co-proponents of the Union Station restoration project which is undergoing a separate MEPA process.

Citizens Advisory Committee

Under the Certificate of the Secretary of Environmental Affairs Establishing a Special Procedure for a Major and Complicated Project, a Citizens Advisory Committee (CAC) was formed to assist the Secretary in review and evaluation of the environmental impacts of the project.

Members of the CAC included one representative from each of the local communities, plus two or more additional representatives from each community and included some elected or appointed officials, members of town rail committees, and representatives of transportation and planning organizations. In January 1993, the Secretary accepted a 28 member committee. On July 10, 1995, the Secretary called for a redesignation and expansion of the CAC.

During the course of the environmental studies, the MBTA and its consultants met with the CAC, as frequently as once a month, to discuss the project's progress and to allow the CAC to review preliminary environmental documents. These meetings usually were broadcast on the local public access cable TV channel and reported in various newspapers. The CAC also has visited each of the proposed station sites and the Worcester Layover Facility on field trips sponsored by the MBTA.

Under the provisions of the Special Procedure, this Final EIR was submitted to the CAC one month prior to submission to MEPA for notice in the *Environmental Monitor.* Comments made by the CAC on this Final EIR and responses to those comments are included with the MEPA documents at the end of this volume.

1.3 Permits and Approvals

The MBTA has initiated project planning and conceptual design consistent with the requirements of the following environmental permits and approvals likely to be needed. Coordination among the MBTA, federal, state, and local agencies, the CAC, and interested groups and individuals, will continue during review of the Final EIR's, and thereafter through final design, permitting, and construction.

Notice of Construction (EPA)

The project, or some of its elements, may require a notice of construction commencement to Region I of the United States Environmental Protection Agency.

Notice of Construction (DEP)

The project, or some of its elements, may require a notice of construction commencement to the Massachusetts Department of Environmental Protection.

Conformity Analysis (Boston MPO)

The project is included in the Clean Air Act conformity analysis for eastern Massachusetts performed by the Executive Office for Transportation and Construction and reported on in the *Boston MPO TIP (FY1995-FY1997, Revised), March 27, 1995*, §2.4, Ch. 10, Appendix A. No project-level conformity analysis is required.

Section 404 Permit, Federal Clean Water Act

The project would require a section 404 permit for any fill contemplated in federally delineated wetlands. Since it is anticipated that the wetlands fill activities associated with the project will affect less than one acre, the project likely will have the benefit of the programmatic general permit administered by the U.S. Army Corps of Engineers. Based on analysis to date, it appears that the project may qualify as a non-reporting Category I activity under the programmatic general permit. In the event that the project does not meet the Category I thresholds, the MBTA would file an application with the Corps pursuant to Category II.

Section 401 (Water Quality Certification) Permit, Federal Clean Water Act

This permit is triggered by any permit required under the Federal Clean Water Act, e.g., the section 404 permit described above. DEP has the authority to issue water quality certification subject to the Massachusetts Water Quality Standards. DEP currently is in the process of consolidating its wetland protection programs in proposed regulations on water quality certification. Under the proposed regulations, federal and state wetlands will be considered cumulatively. As currently proposed, the project will fill less than 5,000 sf. of bordering vegetated wetland, a key threshold for purposes of water quality certification.

Section 402 (National Pollution Discharge Elimination System) Permit, Federal Clean Water Act

Under Section 402(p) of the Federal Clean Water Act, stormwater discharges "associated with industrial activity," including construction activity disturbing more than five acres, must be authorized by an NPDES permit. EPA also is authorized to require NPDES permits for stormwater discharges from non-industrial activities, so-called "Phase II" discharges. It appears that the project is eligible for the general NPDES permit for construction. Unless a project related storm water discharge will contribute to a violation of a water quality standard or be a significant contributor of pollutants to waters of the United States, an individual permit likely would not be required. The MBTA will prepare storm water pollution prevention plans in accordance with the general permit requirements, including appropriate setbacks and other best management practices under the Massachusetts section 401 stormwater discharge certification for the general permit.

Orders of Conditions, Massachusetts Wetlands Protection Act

Any non-exempt activity that will alter a wetland resource area or be conducted in the 100-foot buffer zone have been presented to the local conservation commissions through filing of Notices of Intent for review. Based on current design development, the rail corridor improvements will alter approximately 180 sf of bordering vegetated wetlands.

SECTION 2.0 SELECTION OF PREFERRED ALTERNATIVE

Introduction

This section of the FEIR seeks to lay out the genesis of the preferred alternative identified and to detail the fiscal capacity of the MBTA, and the Commonwealth generally, to pay for that alternative. Section 2.1 reviews the alternatives considered in the 1990 feasibility analysis which led to the choice in principle of the Worcester Rail alternative. The evolution, following the completion of the feasibility study, of the Worcester Rail choice into the preferred alternative portrayed and analyzed in the DEIR also is detailed, as is the meaning, for the DEIR and this FEIR, of the No Build option against which project impacts are to be assessed, since it is not a No Build as customarily understood. Section 2.2 reviews a range of materials already in the public domain to assess the MBTA's general fiscal health and particular capacity to undertake the Worcester Rail project. Section 2.3 argues that, since this capacity can be established clearly and because the project is a state and Federal regulatory requirement, no further financial analyses are needed in the FEIR to follow.

2.1 Alternatives Considered

The MBTA reviews in this section several alternatives to the project presented in the DEIR and this FEIR. First, alternatives are reviewed which were considered in the MBTA's 1990 feasibility report, where the initial choice of the Worcester Extension project is explained. Revisions to the Worcester option since the 1990 feasibility report then are considered and cost estimates brought current. The DEIR commuter bus alternative to the Worcester Extension project and the DEIR No Build alternative are reviewed.

Feasibility Report Analyses

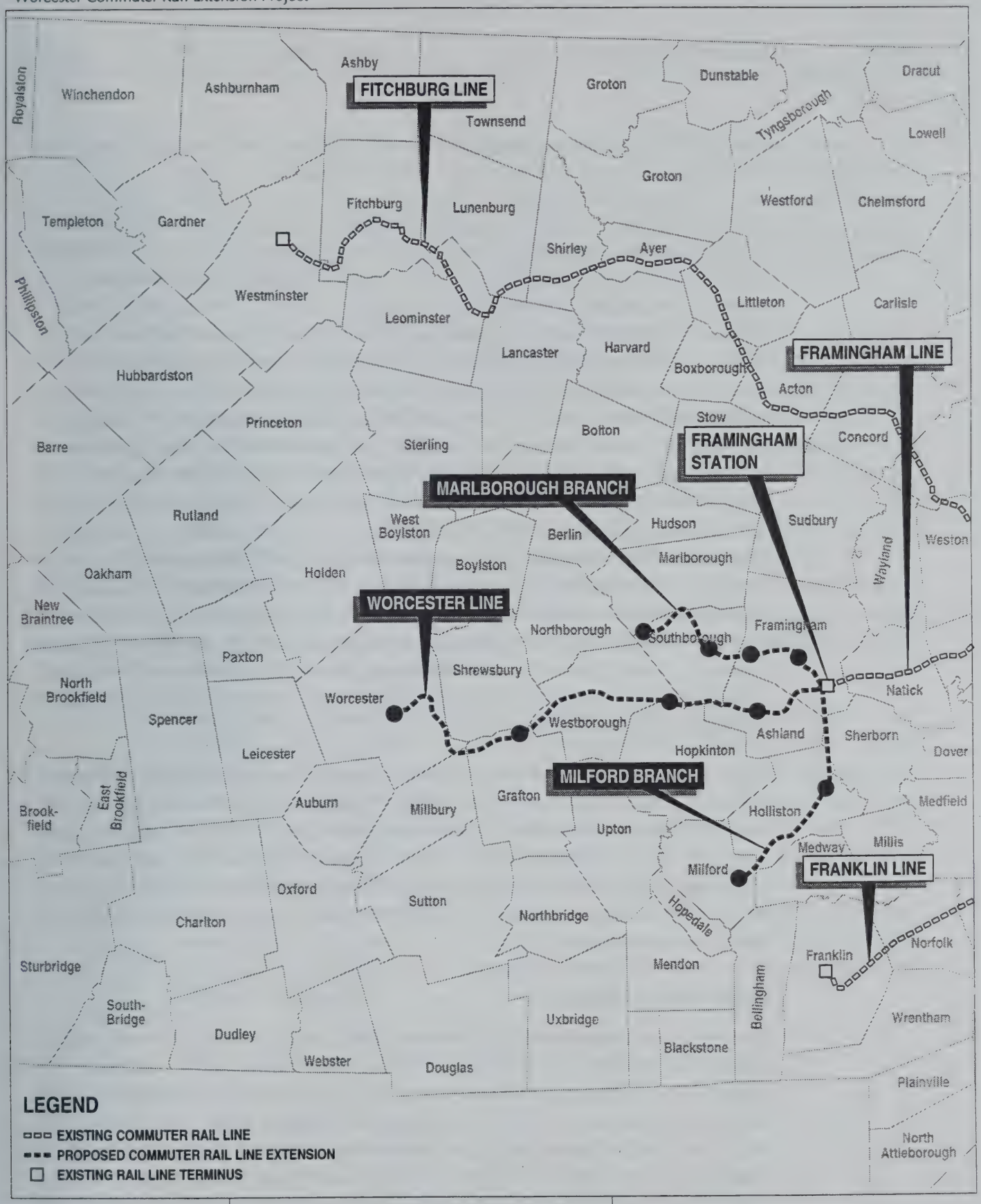
To advance its policy of revitalizing commuter rail services in the Boston metropolitan area, the legislature authorized the MBTA to perform a feasibility study of restoring service to Worcester. Added later to this study for consideration were alternatives of

possible extensions of service from Framingham to Milford, via the existing 12.3 mile Holliston Industrial Line, and from Framingham to Marlborough, via a 10.3 mile right-of-way comprising the Framingham Secondary and Fitchburg Secondary lines. Milford service had been discontinued in 1959, Marlborough service in phases in the 1930's. Freight service along some of these lines continued, though in some areas only infrequently, while in other areas tracks have been removed altogether.

Alternatives Considered

The three lines evaluated in the feasibility study were compared using uniform assumptions: upgrading of track, signals, sidings, grade crossings, and right-of-way fencing to meet MBTA standards; upgrading or creation of stations with standard platforms, canopies, handicapped access by means of so-called "mini-high" platforms; parking to serve projected ridership; 30 minute headways in the peak, 120 minute headways otherwise, to meet MBTA standard operating schedules; modern diesel locomotives and bi-level coaches for rolling stock, of a quantity to meet scheduling and projected passenger volume needs; and layover facilities adequate for four train sets per line.

Several locations on each line were screened for possible stations, using such criteria as parking area adequacy (minimum 250 spaces at grade), need for site grading, wetlands proximity, access to major arterial highways, residential impacts, development costs (including relocation costs), parcel assembly difficulties and station spacing. A preferred location was developed for each proposed station area. The Worcester service assumed new intermediate stations at North Grafton, Westborough and Ashland, the Marlborough service new intermediate stations at North Framingham, West Framingham, Southborough Center and Southborough/495, and the Milford service new intermediate stations at East Holliston and Holliston. See Figure 2.1-1.



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 6 Miles

0 6

FEASIBILITY STUDY

ALTERNATIVE LINES / STATIONS

FIGURE 2.1-1

The Feasibility Study assembled these services into four rail/bus alternatives and a bus-only alternative.

Rail Alternative #1 was new Worcester/Boston commuter rail service, with Marlborough/Boston express bus service during the commuter peaks, and semi-express service during the commuter peaks for Worcester, Shrewsbury, and Westborough. No expansion was assumed in existing private Worcester express bus service. Rail Alternative #2 was Rail Alternative #1 plus peak hour Milford/Boston commuter rail service only, with shuttle bus service along the Milford route between Framingham and Milford in off-peak times. Existing private bus service for Milford was assumed to end at Medway because of the diversion of Milford patrons to the improved and extended Franklin rail line. Rail Alternative #3 was Marlborough service plus Milford service. Trains would make all stops to Framingham; then, for a given departure interval, the train from or to Milford would proceed as an express, and the train from or to Marlborough as a local, or *vice versa*. Existing Milford buses would run only to Medway, as above; the Marlborough/Southborough/Boston route would be dropped. Existing Peter Pan service along Route 9 and the Massachusetts Turnpike was assumed to operate as at present. Rail Alternative #4 was new Marlborough service only. This would be local service beyond Framingham at all times, but express service between Boston and Framingham for peak commuting times. The Marlborough/Southborough/Boston bus route would be dropped. Existing Peter Pan service along Route 9 and the Massachusetts Turnpike was assumed to operate as at the time of the study.

The Bus Alternative assumed no expanded commuter rail service, and enhancements of existing bus service for Worcester/Shrewsbury/Westborough, for Marlborough/Hudson/Southborough, and for Milford. These enhancements concentrated on upgrading peak hour service to 30 minute headways at a minimum, with auxiliary park-and-ride lots to concentrate patrons and reduce stopping time. Since Milford service is assumed because the Franklin commuter rail line is part of the No Build condition, expanded bus service would end at Medway.

Service Areas and Ridership

The service area boundaries for all three rail lines under consideration were, roughly, Spencer on the west, Framingham on the east, the Fitchburg MBTA commuter line communities to the north, and the Franklin MBTA commuter line communities to the south--31 communities in all. The chief focus of the feasibility study's ridership estimates was commuting to Boston from these communities, projected to comprise--based on experience at other MBTA commuter rail lines--about 90% of total ridership and about 95% of peak hour ridership. Estimates of these commutes for 1987 and 2010 were based on information developed by the Boston Metropolitan Planning Organization (MPO) for

the Commonwealth's Central Transportation Planning Staff (CTPS) on commutes to Boston from eastern Massachusetts as well as from communities in New Hampshire, Maine, Rhode Island and Connecticut. Some of this information came from the journey-to-work surveys of the 1980 U.S. census, some from analyses for the Central Artery/Third Harbor Tunnel project, and some from other socioeconomic data concerning the relevant cities and towns.

The feasibility study estimated work trips to downtown Boston from the 31 projected service area communities to be 7,060 in 1987, and 10,130 in 2010, about a 43% increase. The corresponding population for 1987 was 553,160, and for 2010 an estimated 582,340--a 5.2% increase. See Table 2.1-1. For the Worcester line's projected 19 service area communities, there were an estimated 2,800 trips to Boston in 1987, and 4,130 trips were projected for 2010, a 47.5% increase. For the Marlborough line's 9 projected service area communities, there were estimated 4,670 trips to Boston in 1987, and 6,640 trips were projected for 2010, a 42% increase. For the Milford line's 4 projected service area communities, there were an estimated 650 trips to Boston in 1987, and 930 trips were projected for 2010, a 43% increase. (The overall trips-to-Boston figures are slightly lower than the sum of separate estimates for the three services being considered because that sum double-counts potential riders from those communities which more than one line could service.)

Using these estimates of total trips to downtown Boston from the service area, the feasibility study proceeded to estimate how many of them might use each of the rail line or bus alternatives under consideration, assuming certain transportation networks and mode choice factors. For 1987, the Worcester area highway network was added to the CTPS model for metropolitan Boston, and necessary empirical data on traffic flows for the highway links added. The 2010 network used the 1987 baseline and assumed as well completion of the Central Artery/Third Harbor Tunnel, extension of the Franklin commuter rail line to Milford, and, depending on the alternative analyzed, peak hour express bus to Worcester and Marlborough. Mode choice factors, which are assembled in a model which projects trips by mode, address factors such as travel time, travel distance, and travel cost.

Table 2.1-1 Worcester Commuter Rail Extension Study Area

City/Town	Est. 1987 Population	Est. 2010 Population	Est. 1987 Work Trips to Downtown	Est. 2010 Work Trips to Downtown
Framingham	63,800	65,100	2,640	3,710
Sudbury	14,120	14,000	700	960
Ashland	11,200	14,000	170	290
Holliston	12,950	14,000	300	440
Medway	9,500	10,810	210	330
Mendon	3,530	4,150	30	40
Hopedale	3,980	4,060	20	30
Milford	24,280	24,480	320	450
Hopkinton	8,700	9,400	210	310
Southborough	6,430	7,700	210	350
Marlborough	31,150	35,250	360	570
Hudson	17,700	18,250	100	150
Berlin	2,230	2,250	40	50
Northborough	11,340	11,620	120	170
Westborough	13,100	13,600	290	370
Upton	4,300	4,910	30	40
Northbridge	12,450	12,750	20	30
Grafton	11,900	13,620	30	50
Shrewsbury	22,590	23,120	160	250
Boylston	3,540	3,630	20	30
W. Boylston	6,030	5,660	10	10
Worcester	166,000	170,000	780	1,030
Millbury	11,820	11,460	30	40
Sutton	6,600	8,360	30	50
Oxford	12,370	12,960	50	80
Auburn	14,400	14,400	30	80
Leicester	9,650	10,090	40	60
Paxton	3,830	3,820	20	20
Holden	13,770	14,090	20	30
Spencer	11,600	12,480	50	80
Charlton	8,300	12,320	20	30
TOTAL	**553,160**	**582,340**	**7,060**	**10,130**

The results are shown on Table 2.1-2, which reflects both work and non-work trips for 2010. Rail Alternative #3, Marlborough and Milford service, is projected to attract the largest number of passengers overall, 3,860. Rail Alternative #2, Worcester and Milford service, attracts the largest number of commuter rail passengers, with Rail Alternative #3 close behind. The Bus Alternative never attracts as many riders as any rail alternative. Under Rail Alternative #1 and Rail Alternative #2, higher commuter rail speeds make for essentially negligible use of the assumed parallel bus services. Under Rail Alternative #3 and #4, bus services for Worcester service communities were estimated to attract the bulk of projected bus riders, about 950 of them each.

Table 2.1-2 Total Rail and Bus Boardings -Daily Inbound Person Trips

Station	Bus Alt.	Alt. 1 2010	Alt. 2 2010	Alt. 3 2010	Alt. 4 2010
Framingham		1,230	1,230		
Ashland		630	360		
Westborough		920	920		
North Grafton		120	120		
Worcester		880	880		
Framingham				1,320	1,620
Salem End Road				810	820
California Avenue				550	550
Main Street				180	180
Northborough Road				580	730
East Holliston			430	460	
Holliston			130	150	
Milford			180	180	
*Rail Subtotal**	*0*	*2,550*	*3,020*	*2,910*	*2,280*
Bus Subtotal	*1,530*	*40*	*40*	*950*	*950*
TOTAL*	**1,530**	**2,590**	**3,060**	**3,860**	**3,230**

* Framingham Station excluded

Costs and Revenues

The feasibility study compared the rail alternatives and the bus alternative on the basis of their projected costs, capital and operating, and projected revenues. Each of these projections is based on complex assumptions reviewed in detail in the feasibility study.

Capital costs are for required rolling stock to meet projected schedules, but corrected for the melding of existing Framingham service with proposed new alternatives; stations, including site acquisition, relocation costs where applicable, and construction; and right-of-way improvements. Table 2.1-3 details the feasibility study's estimated capital costs in 1989 dollars. To these costs have been added a 20% contingency and 15% for engineering, applied to right-of-way and station costs only. Rail Alternative #1 is the cheapest; Rail Alternatives #2 and #3 are closely comparable and the most expensive; and Rail Alternative #4 is in the middle.

Annual operating and maintenance (O&M) costs are also net, corrected for Framingham costs made redundant by the various new services. See Table 2.1-4. Plainly, in significant part, annual O&M costs for the various alternatives are dependent on needed rolling stock. Simply on the numbers, new service to only one destination is, not surprisingly, cheaper than combined services. Overall, Rail Alternative #4, Marlborough service only, is the cheapest, at $4.33 million per year, and Rail Alternative #1, Worcester service only, is next cheapest, at $5.08 million per year. The combined services are significantly more expensive--Rail Alternative #3, Marlborough/Milford, is $6.29 million, and Rail Alternative #2, Worcester/Milford ,is $7.07 million.

Annual net O&M costs are the basis for two further feasibility study calculations for the rail alternatives, cost per passenger and cost per revenue train mile. See also Table 2.1-4. Cost per passenger is the quotient of annual O&M costs divided by net annual passengers inbound and outbound. Annual O&M costs net out costs of Framingham service--peak and off-peak for Rail Alternatives #2 and #3, off-peak only for Rail Alternatives #1 and #4--made redundant by the proposed new service. Cost per revenue train mile, which also nets out certain Framingham costs, is the quotient of annual net O&M divided by net revenue train miles. A revenue train mile is a mile for which revenue is collected. Here the Worcester commuter service, Rail Alternative #1, is plainly superior; the other single-destination service, Marlborough-only, Rail Alternative #4, is the most expensive, with the combined services of Rail Alternative #2 and Rail Alternative #3 in the middle, though not particularly close.

Table 2.1-3 Summary of Capital Costs (1989 $Thousands)

Category	Alternative No. 1 Worcester City	Alternative No. 2 Worcester/ Milford	Alternative No. 3 Marlborough/ Milford	Alternative No. 4 Marlborough Only
Right of Way Improvements (includes bridges & culverts)	10,909.0	25,970.0	27,786.0	12,968.0
Stations	20,200.1	23,847.2	21,346.5	18,943.8
Rolling Stock ($1.34M trailer, $1.47M control car, $2.3M engine)	34,680.0	38,700.0	39,790.0	41,380.0
Subtotal	65,789.1	88,517.2	88,922.5	73,291.8
Contingency (@20%)	6,221.8	9,963.4	9,826.5	6,382.4
Engineering (@15%)	4,666.4	7,472.6	7,369.9	4,786.8
TOTAL	**76,677.3**	**105,953.2**	**106,118.9**	**84,460.9**

Table 2.1-4 Rail Operating and Maintenance Costs

Measure	Alt. 1 Worcester Express	Alt. 2 Worcester Milford	Alt. 3 Marlborough Milford	Alt. 4 Marlborough Express
Annual O&M Cost Estimate				
Annual O&M Cost of New Service (in million$)	$6.33	$11.54	$10.76	$5.58
Annual O&M Cost of Framingham Service (in million $)	$1.25	$4.47	$4.47	$1.25
Annual O&M Cost of Extension (in million $)	$5.08	$7.07	$6.29	$4.33
Unit Costs of Service				
Cost Per Passenger	$4.33	$4.98	$4.46	$3.50
Cost/Rev. Train Mile	$22.86	$27.17	$32.60	$35.82

Besides the rail alternatives, costs for the Bus Alternative and the express bus services associated with the four rail alternatives also were developed in the Feasibility Study. Local services were, for costing purposes, deemed not integral to the analysis, and, in any case, likely to be marginal. The Bus Alternative costs appear in Table 2.1-5. Cost per passenger is $1.96, and per revenue bus mile $2.22. Because the ridership forecasting model assigned no trips to the Worcester express bus service under Rail Alternative #1 and #2, no costs were calculated for this service, but for Rail Alternative #3 and #4, the cost per passenger is $2.23, and cost per revenue bus mile $2.06.

Table 2.1-5 Bus Operating and Maintenance Costs

Measure	Bus Alternative	Alternatives 3 and 4 Worcester Express
Revenue Bus Miles	691,637	518,636
Annual IB Passengers	391,870	239,330
Annual Passengers (IB + OB)	783,740	478,660
Annual Bus O&M Cost (millions)	$1.53	$1.07
Cost Per Passenger	$1.96	$2.23
Cost/Rev. Bus Mi.	$2.22	$2.06
Pass./Rev. Bus Mi.	1.13	0.92

Cost Effectiveness

Overall cost comparisons were then developed for the four rail alternatives and the Bus Alternative. In terms of total annual net O&M cost, the Bus Alternative is the cheapest overall, but Alternative #1 is the cheapest among the rail alternatives. See Table 2.1-6. In terms of cost per passenger comparisons, the Bus Alternative is the cheapest per passenger, but serves, by far, the fewest passengers, as Table 2.1-2 shows. Rail Alternative #4 has the lowest cost per passenger, Rail Alternative #1 the second highest cost. It needs to be kept in mind that these are out-of-pocket costs, but not necessarily MBTA costs, that are being analyzed. The MBTA would pay for commuter rail costs, but not for much of the express bus costs, since these are offered, for the most part, by private sector companies.

Table 2.1-6 Total Operating and Maintenance Costs

Measure	Bus Alternative	Alt. 1 Worcester Express	Alt. 2 Worcester Milford	Alt. 3 Marlborough Milford	Alt. 4 Marlborough Express
Passengers		1,172,980	1,420,200	1,409,680	1,236,100
Annual Rail Passengers (IB+OB)					
Annual Bus Passengers (IB + OB)	783,740			478,660	478,660
Total Passengers	783,740	1,172,980	1,420,200	1,888,340	1,714,760
O&M Costs					
Net Rail O&M Cost (in million $)	$0.00	$5.08	$7.07	$6.29	$4.33
Bus O&M Cost (in million $)	$1.53	$0.00	$0.00	$1.07	$1.07
Total O&M Cost	$1.53	$5.08	$7.07	$7.36	$5.40
Unit Costs					
Cost Per Passenger	$1.96	$4.33	$4.98	$3.90	$3.15

The cost analysis can be brought full circle by determining the net annual costs of the various alternatives considered in the feasibility study. Net annual cost is the sum of net annual operating costs and annualized capital costs. Any capital cost can be annualized by dividing its separately costed elements by their respective life expectancies in years, and then summing the resulting quotients, though this plainly does not consider interest costs and inflation. The feasibility study estimates life expectancies for various project components as they are used in the various rail alternatives. In the feasibility study, Rail Alternative #1, Worcester commuter service, has the lowest net annual cost among the rail alternatives. See Table 2.1-7. The Bus Alternative has a considerably lower annual cost, $2.2 million, but the feasibility study did not provide revenue estimates for this option, so net annual cost cannot be calculated.

Table 2.1-7 Net Annual Cost of Rail Alternatives ($ Millions)

	Alternative #1	Alternative #2	Alternative #3	Alternative #4
Annualized Capital Cost	13.64	14.77	12.43	13.27
Annual Operating Cost	5.08	7.07	6.29	4.33
Total Annual Cost	18.72	21.84	18.72	17.60
Annual Revenues	3.82	4.94	2.62	1.70
Net Annual Cost	14.90	16.90	16.10	15.90

The ultimately favorable cost/benefit performance of Rail Alternative #1, among the rail alternatives considered in the feasibility study, is based on its particularly good estimated revenues, as shown in Table 2.1-7. Because the Worcester commuter service extends farther from Boston, it involves more zones with progressively higher associated fares per zone than the relatively short services to Marlborough or to Milford. The longer runs lead to higher revenues.

Preferred Alternative Changes Since Feasibility Analysis

The feasibility report cost estimates do not reflect all the costs of the project now under MEPA review, as the project has been somewhat redefined since the feasibility report. Two additional stations have been added, in Millbury and Southborough. These new stations will require additional signals and other infrastructure. Parking has been expanded beyond what the feasibility report covered. All told, the MBTA now estimates the project will cost $114 million, of which about $80 million will be for track and signal improvements, layover facility, stations, land acquisition costs and mitigation, and $34 million for rolling stock. Table 2.1-8 provides a breakdown of the estimated construction costs. The MBTA plans to use state bond funds to cover the project's capital costs. Annual debt service will equal approximately $9.7 million, according to the MBTA's most recent estimate.

The MBTA's most recent estimate of operating costs per year for the Worcester extension as now proposed is approximately $12 million. Annual revenue is projected at approximately $5 million. This yields about a 42% cost recovery ratio for the proposed Worcester service. This ratio is well in excess of the MBTA's overall target of 33-1/3% for recovery of all operating costs, and higher than for other commuter rail services offered by the MBTA.

The MBTA has calculated the net annual cost of the project, which is the sum of its annualized capital cost and its estimated annual operating cost, less estimated revenue. The annualized capital cost of the project is $3.3 million. See Table 2.1-9. Since, as just

Table 2.1-8 Construction Cost Estimate

Project Element	Estimated Cost	Project Element	Estimated Cost
Track and ROW Improvements		**Layover Facility**	
Trackbed Preparation	$4,500,000	Track and Fencing	$2,000,000
ROW Fencing	$300,000	Electrical System	$1,800,000
Bridge, Wall, Repairs	$1,700,000	Lighting	$250,000
Noise and Vibration Mitigation	$1,200,000	Drainage and Grading	$200,000
Conrail Force Account Work		Crew Quarters and Parking	$800,000
New Interlockings (CP 22 to Worcester)	$7,740,000		
Second Track MP 33-40	$12,575,000	**Station/Parking Development**	
Cab Signals ("Cove" to CP 22)	$1,800,000	Ashland	$4,610,000
New Storage Track	$1,300,000	Southborough	$3,220,000
Track Improvements for 70mph	$2,150,000	Westborough	$2,819,000
New Crossover CP 45	$763,000	Grafton	$3,045,000
Retire CP 44	$707,000	Millbury	$3,306,000
Flagging	$755,650	Worcester	$1,500,000
		Land Acquisition	
		(station sites and layover)	$6,000,000
Subtotal	**$35,490,650**	**Subtotal**	**$29,550,000**
Total Rail and Site			**65,040,650**
3% Project Administration and Field Inspection			1,951,220
12% Contingency			7,804,878
8% Engineering Design			5,203,252
TOTAL CONSTRUCTION ESTIMATE			**80,000,000**
Rolling Stock: (4 train sets)			34,000,000
TOTAL PROJECT COST			**$114,000,000**

Table 2.1-9 Annualized Capital Cost for Preferred Alternative			
Capital Element	**Years' Life Expectancy**	**Cost**	**Annual Cost**
Land	100	$6,000,000	$60,000
Roadbed	100	$3,500,000	$35,000
Tracks	30	$14,300,000	$476,366
Bridges	30	$1,700,000	$56,667
Signals	30	$14,391,000	$479,700
Stations	30	$19,800,000	$660,000
Layover	30	$5,050,000	$168,333
Fencing	20	$300,000	$15,000
Rolling stock	25	$34,000,000	$1,360,000
TOTALS		**$99,041,000**	**$3,311,066**

stated, the MBTA projects an annual operating cost for the project of $12 million, the project's total annual cost is $15.3 million. Less projected annual revenue of $5 million, the project's net annual cost is approximately $10.3 million. See Table 2.1-10.

The annual net cost recalculation for Worcester Rail in Table 2.1-10 suggests also the need to recalculate the annualized capital cost figures given for the four rail alternatives in the feasibility study, using raw data from the feasibility study. The results still favor Rail Alternative #1 among the rail alternatives. See Table 2.1-11. Although it is not possible, using the feasibility study, to assess the net annual cost of the Bus Alternative, this recalculation of annual net cost for the rail alternatives certainly reduces the cost disparity between rail and bus options for enhanced Worcester commuter service. Of course, it does not eliminate the volume of service disparity, which remains very large.

Table 2.1-10 Net Annual Cost of Worcester Extension Project	
Annualized Capital Cost	$3,311,066
Annual Operating Cost	$12,000,000
Total Annual Cost	$15,311,066
Annual Revenues	5,000,000
Net Annual Cost	$10,311,066

Table 2.1-11 Recalculated Annual Net Cost of Rail Alternatives ($ Millions)

	Alternative #1	Alternative #2	Alternative #3	Alternative #4
Annualized Capital Cost	2.27	3.00	3.02	2.55
Annual Operating Cost	5.08	7.07	6.29	4.33
Total Annual Cost	7.35	10.07	9.31	6.88
Annual Revenues	3.82	4.94	2.62	1.70
Net Annual Cost	3.53	5.13	6.69	5.18

Commuter Bus Service Alternative

The MBTA for the DEIR developed a commuter bus service alternative more comprehensive than was considered in the feasibility study. The performance standard for this alternative was to approximate, by means of peak-hour express and off-peak semi-express bus service, the commuter rail services proposed by the preferred alternative at its respective stations, so as to lay the basis for environmental analyses whose results would be strictly comparable. Under this alternative, several elements of the preferred alternative would go away, but several would remain. The elements going away would be the layover facility, all station work, and much track and signal work. The elements remaining would be all parking lots, all approaches to the parking lots, and most drainage facilities.

The MBTA estimated the net annual cost for the commuter bus service alternative in the DEIR. The estimates of Worcester Rail's capital costs in the DEIR have been used as the basis for comparing the annualized capital costs of the Worcester rail and commuter bus alternatives, using the many elements of the commuter rail project, including land acquisition, parking lot development and site drainage, which also will be part of the commuter bus service alternative. Also, the feasibility study's estimate of 12 years was used as the measure of a bus's life expectancy, since feasibility study estimates for all other life expectancies were used in estimating annualized capital costs in the DEIR. The MBTA estimates that the commuter bus option would require approximately 57 busses costing approximately $275,000 each, or $15,675,000 all told. The results are in Table 2.1-12. The annualized capital cost then is used as an element in the net annual cost estimate. The MBTA's DEIR estimate of revenues from the commuter rail project will be used for the commuter bus service alternative as well. Existing data on MBTA express buses was used to estimate O&M costs for the required commuter bus service fleet. The results are in Table 2.1-13.

Table 2.1-12 Annualized Capital Cost for Commuter Bus Alternative

Capital Element	Years' Life Expectancy	Cost	Annual Cost
Land	100	$5,000,000	$50,000
Parking Facilities	30	7,700,000	256,666
Buses (57 @ $275,000)	12	15,675,000	1,306,250
TOTAL		**$28,375,000**	**$1,612,916**

Table 2.1-13 Net Annual Cost of Commuter Bus Alternative

Annualized Capital Cost	$1,612,916
Annual Operating Cost (Busses Only)	$1,624,000
Total Annual Cost	$3,236,916
Annual Revenues	$5,000,000
Net Annual Cost	($1,763,084)

No Build

With operations so complex as those on the existing Conrail right-of-way on which the project would operate, it is important to note that some activities discussed in the DEIR are very likely to happen in any case, and should be kept in mind when thinking about the difference between No Build and Build impacts. Among the very likely things that will happen are the track lowering along the Conrail right-of-way to achieve 21'-0" vertical clearance for freight (not part of this project, by EOTC), the reconstruction of four bridges over the Conrail right-of-way, and the demolition of one bridge over the right-of-way. MHD will see to any required environmental review concerning the bridge reconstructions or demolition. Also likely to happen are construction of 1,500 Park'n'Ride parking spaces by the Massachusetts Turnpike Authority at various Turnpike exits, upgrade of approximately 4 miles of Route 146 in Worcester County from 2 lanes to 4 lanes, a new Massachusetts Turnpike/Route 146/Route 20 interchange. Among the things that may well happen in any case are the reconstruction of missing track, and upgrading of other track, in the Conrail right-of-way. These right-of-way impacts are being assessed in this FEIR.

2.2 Financial Feasibility of Preferred Alternative

The DEIR identified the preferred alternative and reviewed and updated the cost estimates of the 1990 Feasibility Report. Nonetheless, a number of commentaries on the DEIR raised questions about the financial capacity of the MBTA to undertake the Worcester project and about whether the preferred alternative was the most cost-effective alternative. The MBTA wishes at least to defer the cost-effectiveness question to the Commuter Rail Stations and Railroad Operations FEIR, which the Secretary has agreed the MBTA may submit after the review of this FEIR. In this FEIR, the MBTA wishes to address its financial capacity to undertake the preferred alternative. Since the preferred alternative is the most expensive alternative considered, if it is within the MBTA's capacity, all other alternatives are, by definition, within the MBTA's capacity.

Nonetheless, the MBTA notes that this capacity question, at least on the capital side, is essentially moot, since the Legislature has in the 1994 transportation bond legislation authorized for the Worcester project $78 million not transferrable to any other project. Acts of 1994, c. 273, §2H, line item 6005-9534, and §24. C. 273 also authorizes funds for rolling stock acquisition, *cf.* §2H, line item 6005-9514 ($37,000,000).

The MBTA proposes, for the financial capacity analysis of this FEIR, to build on the financial analyses of the MBTA's *Greenbush SDEIS/R* and *South Boston Piers FEIS/R*, on one hand, and of the recent Boston Metropolitan Planning Organization (MPO) transportation improvement program (TIP), on the other, to establish the MBTA's financial capacity to undertake the Worcester Commuter Rail preferred alternative. The MBTA documents establish that the MBTA itself has the capacity to proceed with Worcester Rail, among several other projects. The MPO TIP establishes that this MBTA capacity is part of a larger whole of a well-funded Commonwealth transportation plan.

MEPA recently has reviewed a number of MBTA capital projects which were the subject of various financial analyses. The most recent such analyses were presented in the *Greenbush SDEIS/R* and the South Boston Piers FEIS/R. The *Greenbush SDEIR* was approved by the Secretary's certificate dated June 1, 1995. No further financial questions were posed for the FEIR that must still be submitted on the Greenbush line. The South Boston Piers FEIS/R was approved by the Secretary's certificate dated February 16, 1994.

Since, the Secretary's Certificate on the *Greenbush SDEIR/S* required no further financial analysis in the Greenbush MEPA review, the MBTA views the Greenbush financial analysis as an appropriate resource for discussing the MBTA's overall capacity to support the Worcester preferred alternative since this analysis includes the capital and operating expenses of Worcester Rail, among other projects. Likewise, since the South Boston Piers

MEPA review is complete, it too can be such a resource since its financial analyses include Worcester Rail and all of Old Colony including the Greenbush line. What follows summarizes the relevant South Boston Piers and Greenbush financial discussions. However, this FEIR incorporates by reference those discussions, and all their supporting materials in the MEPA record, into this FEIR.

The South Boston Piers FEIS/R concludes that the MBTA's finances are sufficient to cover, through 2015--the horizon year of the analysis--the costs of maintaining current operations and of funding planned MBTA expansions, including the Transitway itself, the Old Colony project and "other growth projects." *South Boston Piers FEIS/R,* EOEA #6826, pp. 6-9, 6-8. The analysis plan for assessing the MBTA's capacity to take on the Transitway, the most expensive and ultimately the chosen option in the *South Boston Piers FEIS/R,* was laid out in MBTA, *South Boston Piers/Fort Point Channel Transit Project,* Report No. 11, *Financial Analysis Methods Report,* prepared by URS Consultants, Inc., September, 1991. The actual fiscal capacity analysis was performed in MBTA, *South Boston Piers/Fort Point Channel Transit Project,* Report No. 20, *Results Report: Financial Feasibility*, Cambridge Systematics, Inc., with URS Consultants, Inc., April, 1992. Report No. 20 was summarized in the *South Boston Piers DEIS/SDEIR,* Ch. 6. Report No. 20's assumptions were updated for the *South Boston Piers FEIS/R* to reflect MBTA budget changes for FY1995 and an assumed 4.8% annual growth in future real state budget assistance and 5.1% annual growth rate in future real contract and additional state assistance. "Other growth projects" in the *South Boston Piers FEIS/R* financial feasibility model include "all MBTA capital projects included in the Authority's new five-year capital plan. This plan includes projects mandated by the SIP, by the CA/T Project Mitigation Plan, and by the ADA." *[South Boston Piers FEIS/R,* pp. 6-4, 6-5; See also *South Boston Piers FEIS/R, Response to Comments Appendix,* p. DEIS-34.]. This MBTA capital plan is the so-called program for mass transportation (PMT) required by the MBTA enabling act. See G.L. c. 161A, §5(g). Included in the PMT as one of the near-term SIP and CA/T mitigation projects is Worcester Rail, at an estimated capital cost of $119 million. Commonwealth of Massachusetts, Executive Office for Transportation and Construction, *Commuting in a New Century: The New Program for Mass Transportation,* Approved by the MBTA Advisory Board March 1, 1994, Appendix G, p. G-38; See also pp. 8-4 to 8-7, and Appendix G, pp. G-31 to G-41.

Building upon the financial analysis in the South Boston Piers FEIS/R, the Greenbush financial analysis also concludes that the MBTA is in sound financial condition and that, though 2015, it has the financial capacity to run the existing MBTA system, make improvements required by the Americans With Disabilities Act, and complete other new projects to which the MBTA has committed. *Greenbush SDEIS/R,* p. VI-2. These new projects include the Transitway, Old Colony excluding Greenbush, and Worcester. *Greenbush SDEIS/R,* p. VI-9. The South Boston Piers FEIS/R financial analysis was

reviewed for the *Greenbush SDEIS/R* and updated to reflect the MBTA's FY1996 budget, some revisions to the PMT, and a revised assumption for annual growth (perhaps between 1995 and 2005 only) in future real state contract and additional assistance. *Greenbush SDEIS/R*, pp. VI-2, VI-4, VI-6. Since no Federal assistance is assumed for Greenbush, its capital and operating costs were determined to be feasible only if fitting within the long-term MBTA financial model incorporating this revised annual assistance growth rate, which itself was determined to fit within overall assumptions about the growth of personal income and tax revenue in Massachusetts. *Greenbush SDEIS/R*, pp. VI-6. Also assumed in the model is flat Federal operating assistance, modest annual growth of 4.5% in fare and miscellaneous revenues, and local assessments rising at no more than 2.5% annually, the rate at which baseline property taxes in a municipality may lawfully rise annually. *Greenbush SDEIS/R*, pp. VI-2, VI-6. Federal capital grants roughly at current levels are also assumed--not unreasonably, given that these funds come largely from dedicated Federal revenue sources. *Greenbush SDEIS/R*, p. VI-7. Each Greenbush alternative other than No Build was determined to create additional MBTA costs not covered by the MBTA financial model used, thus requiring either new monies or the rescheduling of other projects' completions if Greenbush were to proceed now, or Greenbush's deferral until the current PMT items are concluded. *Greenbush SDEIS/R*, p. VI-12. However, given that Worcester must be operational by December 31, 1996, the MBTA has no current plans to reschedule it should Greenbush's construction require any project rescheduling. The *Greenbush FEIS/R* is expected to clarify that project's construction schedule and financing.

Boston MPO TIP

In March, 1995 the Boston MPO approved its current TIP to cover transportation and highway projects in Federal fiscal years 1995, 1996, and 1997 to be continued, built, or started in the MPO region. Among the projects included in this TIP is the Worcester Rail project. This inclusion is, in part, purely for regulatory reasons--Worcester Rail is, under the regulations governing TIPs, a "regionally significant project," and, in any case, the March 1995 TIP includes, in its conformity analysis for all the eastern Massachusetts non-attainment area, all commuter rail operations whether or not wholly inside the Boston MPO boundaries. The inclusion of Worcester also is directed, however, at making comprehensive the financial analysis required by the TIP regulations as part of the TIP. These regulations require this TIP analysis be "financially constrained." 23 CFR 450.324. This means the TIP must be plausible about expected revenues and costs, operating and capital, for existing highway and transit operations and for planned highway and transit improvements. In particular, since the TIP is most centrally about ongoing and new projects, plausible revenues particularly means plausible construction revenues, or capital costs. The March 1995 TIP makes only general statements about the

Commonwealth's history of providing adequate operating revenues for its transportation systems. *Boston MPO TIP (1995-1997, Revised)*, §7.2.4.

The March 1995 TIP contains estimates of Federal capital assistance likely to be available to the Boston MPO for highways and transit. These estimates were developed by the Executive Office of Transportation and Construction using authorization levels for the relevant years of the Intermodal Surface Transportation Efficiency Act, widely known as ISTEA. Also estimated and pledged are the required state capital funding matches for the Federal funds available, and capital funds from the state where there is no Federal match. The 1994 transportation bond bill is the funding source for most of the state pledge.

All told, the TIP's financial analysis concerning transit projects meets the requirement of financial constraint. All proposed projects are, between available Federal and state resources, adequately funded. The Worcester project, however, depends on no Federal revenues, since it will be fully state-funded. It is also, as noted above, to receive earmarked state monies from the 1994 transportation bond bill.

While the MBTA must acknowledge that, as of the submission of this FEIR, the TIP is not yet financially constrained, only the highway component of the TIP's financial analysis is an issue. The Commonwealth, to cover costs associated with construction of the Central Artery/Third Harbor Tunnel (CA/T) project (whose earmarked funding in ISTEA ends, in any case, after FY96), has proposed the creation of the Massachusetts Highway System (MHS), under which the Massachusetts Turnpike Authority will levy tolls the proceeds which will go, at least in part, to paying for post-FY1996 CA/T costs. The TIP assumes, in both FY96 and FY97, that the MHS will yield $200 million for CA/T costs. Because the MHS proposal has not yet been enacted by the legislature, federal TIP approval has been held up. EOTC has urged the legislature to move on MHS, and it is expected to be enacted this session. Since only TIP highway funding is at issue, and since the MHS roadblock is expected shortly to be removed, the MBTA believes that financial analysis of the Boston MPO 1995-1997 TIP otherwise shows that the MBTA is part of regional transportation planning area whose components either are now, or will shortly be, well-financed as to programmed projects, including Worcester Rail. It should be noted that Greenbush funding, as in the *Greenbush SDEIS/R,* remains to be determined, and that Greenbush does not figure in the TIP's financial analyses. *Cf. Boston MPO TIP (1995-1997, Revised)*, pp. 4-6, 4-8, 5-4, 5-5, 5-15, 6-5, 6-14.

2.3 Conclusion

In reviewing the financial impacts of the preferred alternative, the commuter bus service alternative, and No Build, the MBTA has had to keep in mind not only these impacts and its policy goals for developing a regional transportation network, but the requirements of other state regulations and federal law. In response to a number of DEIR comments, by the Secretary and others, the MBTA wishes once again to point out, as it pointed out in the DEIR, that the preferred alternative in the DEIR for the Worcester Rail project is the same as the project required by DEP regulation 310 CMR 7.36(2)(c)2. Since the Worcester DEIR underwent MEPA review, this regulation, and the entirety of 310 CMR 7.36 of which it is a part, have achieved the additional status of becoming elements of the Commonwealth's State Implementation Plan (SIP) under the federal Clean Air Act by virtue of EPA's action on October 4, 1994, (59 *FR* 50495 *et seq.*). Opportunity for comment on DEP's and EPA's regulatory actions, by agencies or citizens, has long ago passed. The DEP regulations at 310 CMR 7.36(2)(c)2 require that the Framingham/Worcester commuter rail extension be operational before December 31, 1996. This requirement is enforceable under state and federal law, including by citizen suit.

Further provisions of 310 CMR 7.36 allow for the substitution of alternates to any project it lists, if the responsible agency acting through the Executive Office of Transportation and Construction (EOTC), can demonstrate that the project required by DEP regulation is "infeasible due to associated adverse engineering, environmental or economic impacts." This further provision appears to rule out the No Build option. Nor, based on the analyses presented in the DEIR and this FEIR, is the project, because of engineering or environmental impacts, infeasible. Instead, the proposed basic commuter rail service improves air quality over No Build, and also serves long-standing MBTA policy goals around the development of a viable public transportation system which affords the various regions around Boston equal access to its downtown. Particularly in light of these latter goals, any project which also advances the air quality requirements of the Commonwealth should be welcomed. The economic feasibility of Worcester Rail, both *per se* and in the context of overall MBTA and state transportation planning, has been demonstrated in section 2.2 above.

Since the Worcester Rail project is not infeasible; since the legislature has spoken to the desirability of the preferred alternative by virtue of its Worcester Rail authorization in the 1994 transportation bond bill; since the Boston MPO, in compliance with federal requirements, has determined the overall financial capacity of transportation agencies, including the MBTA, to maintain existing transit operations and new transit initiatives, including the Worcester Rail preferred alternative; since, in the SIP for ozone attainment

by the 1999 deadline to which it is subject, the Commonwealth has committed to the preferred Worcester alternative as part of its compliance scheme--the MBTA petitions the Secretary to find, in the certificate on this FEIR, that financial questions concerning the project, including questions of cost-effectiveness, have undergone sufficient MEPA review. Such a finding would be consistent with the Secretary's *Greenbush SDEIS/R* certificate, in which it was pointed out that "[while] many commentaries have raised issues concerning project costs and the effective use of public resources [,...] and while those issues are essential considerations in the public decision-making process, they are not matters on which [the Secretary] ... can require further analysis under MEPA, let alone render a decision." Old Colony Railroad Rehabilitation Project, Greenbush Line Corridor, EOEA #5840, *Certificate of the Secretary of Environmental Affairs on the Supplemental Draft Environmental Impact Report*, June 1, 1995, p. 2, Footnote 3.

SECTION 3.0 PROJECT ELEMENTS

Introduction

This section provides a description of the rail corridor improvements and the layover facility related to restoration of commuter rail service to Worcester. Train schedule and fare data, implementation schedule, construction costs and MBTA mitigation policy on environmental impacts also are included. Other project elements, including commuter rail stations and railroad operations, will be the subject of a subsequent FEIR.

3.1 Railroad Right-of-Way

The extension of MBTA commuter rail service from Framingham to Worcester will operate over trackage owned and maintained by Conrail. The MBTA will execute an operating agreement with Conrail for use of the tracks for commuter rail purposes. The corridor from Boston to Worcester will continue to serve freight needs as well as passenger service by Amtrak and MBTA. Present service between South Station and Framingham is over tracks owned by the MBTA.

Most of the existing mainline between Boston and Worcester currently is double tracked with continuous welded rail. The seven mile section between milepost (MP) 33.2 and MP 40.3 currently is single tracked. The eastbound track in this section was removed by Conrail in 1985, but the track roadbed remains generally wide enough to accommodate replacement of the second track. This second track will be restored as part of this project to accommodate safe, efficient operations of the additional commuter rail trains. The eastbound track between MP 40.3 and MP 44.4 currently is used by Conrail as a siding. This section of track is in poor condition and will be rehabilitated, including installation of new continuous welded rail, as part of this project. The need for replacement of the siding facility recently was identified by Conrail. The new siding track installation will be located between MP 44.8 and MP 46.2, just west of Union Station in Worcester.

Additional track work will be undertaken to improve track geometrics to permit 70 mph operations for Amtrak and MBTA trains. Rail corridor improvements also will include

upgrading of communication signals, switching, installation of additional cross-overs in the vicinity of proposed stations, and related improvements necessary to accommodate commuter rail service. In the vicinity of station sites, track center-to-center distance will be increased to 14'-0", and fencing between inbound and outbound tracks will be installed to discourage pedestrian crossings. In other areas identified as critical to safety and security, new fencing will be installed at right-of-way edges, as well.

In conjunction with EOTC objectives of improving vertical clearances on this line, track work and/or bridge alterations will be made to provide a through vertical clearance of 21 feet in the area of track replacement from MP 33.2 to MP 40.3. Improved vertical clearance is not essential for restoration of commuter rail service.

Overhead bridges between Framingham and Worcester with existing vertical clearances less than 21'-0" are shown in Table 3.1-1. Between MP 33.2 and MP 40.3, the track will be lowered approximately 12" at the Shrewsbury Street bridge in Grafton; the Pine Street bridge in Grafton will be replaced by the Massachusetts Highway Department (MHD) providing the 21'-0" vertical clearance in a compatible time frame with the commuter rail project; and the Fisher Street bridge in Westborough will be removed by the MHD.

The Route 85 (River Street) railroad bridge will be replaced as part of the project to provide room for a sidewalk and for improved sight distance near the intersection with Southville Road and near the proposed access drive to station parking south of the tracks. The issue of vertical clearance under the bridge is a concern for MHD, Conrail, and the Town of Southborough. The bridge now has a posted underclearance of 11 feet. The MHD prefers an underclearance of 14'-6". If the roadway were under state control (this section of River Street is controlled by the Town of Southborough), a variance would be required for any clearance less than 14'-6". Conrail also prefers the 14'-6" clearance to reduce the possibility of their bridge being hit and damaged, but providing 14'-6" clearance would require a significant amount of track work and cost several million dollars. The Town of Southborough recently has requested that the bridge underclearance remain at the existing clearance to eliminate the possibility of more and larger trucks causing impacts on local streets.

At the present time, Conrail is reviewing various bridge replacement alternatives. Assuming they can be satisfied with a bridge design that can ensure the structural integrity of the bridge versus possible damage by vehicles or loads greater than 11 feet in height, then the bridge can be replaced at the existing clearance above the roadway.

The rail corridor is depicted on Figure 3.1-1, Panels 1 through 9, along with the location of all improvements.

Table 3.1-1 Railroad Vertical Clearance

Town	Overhead Bridge	Milepost	Work Required for 21'-0" Vertical Clearance
Worcester	Hamilton Street	41.67	Construct New Bridge*
Grafton	Shrewsbury Street	38.00	Lower Tracks 12"
	Pine Street	36.40	Construct New Bridge*
Westborough	Fisher Street	34.04	Bridge removal by MHD
	Milk Street	32.71	Requires 8" Track Lowering**
	Fruit Street	28.92	Requires 8" Track Lowering**
Southborough	Bridge Street	28.02	Requires 10" Track Lowering**
Ashland	Howe Street	26.08	Requires 10" Track Lowering**
	High Street	25.25	Construct New Bridge*
	Fountain Street	23.67	Construct New Bridge*
Framingham	Winter Street	22.35	Requires 12" Track Lowering**
	Fountain Street	21.84	Construct New Bridge*

* *Functionally obsolete and structurally deficient bridges scheduled for reconstruction under Massachusetts Highway Department Bridge Replacement and Rehabilitation Program.*

** *Table shows required track lowering which will not be part of the Worcester Commuter Rail Extension Project. Except for the Howe Street bridge in Ashland, the other 5 bridges could be replaced by the MHD or would require EOTC action to lower the track.*

Milepost 22-Milepost 33.2

Between MP 22 in Framingham and MP 33.2 in Westborough, rehabilitation of the two existing tracks will include spot tie replacement and surfacing necessary to allow increased train speeds.

Milepost 33.2 - Milepost 40.3

The construction of a replacement second track from MP 33.2 in Westborough to MP 40.3 in Worcester will include the rehabilitation or replacement of the subgrade material, reuse or replacement of the ballast (anticipated that only 20% will require replacement), and the installation of new wood ties and continuous welded rail. Drainage features and related improvements to the railroad cross-section will be constructed in accordance with current design criteria. Whereas all track and signal work outside of this second track

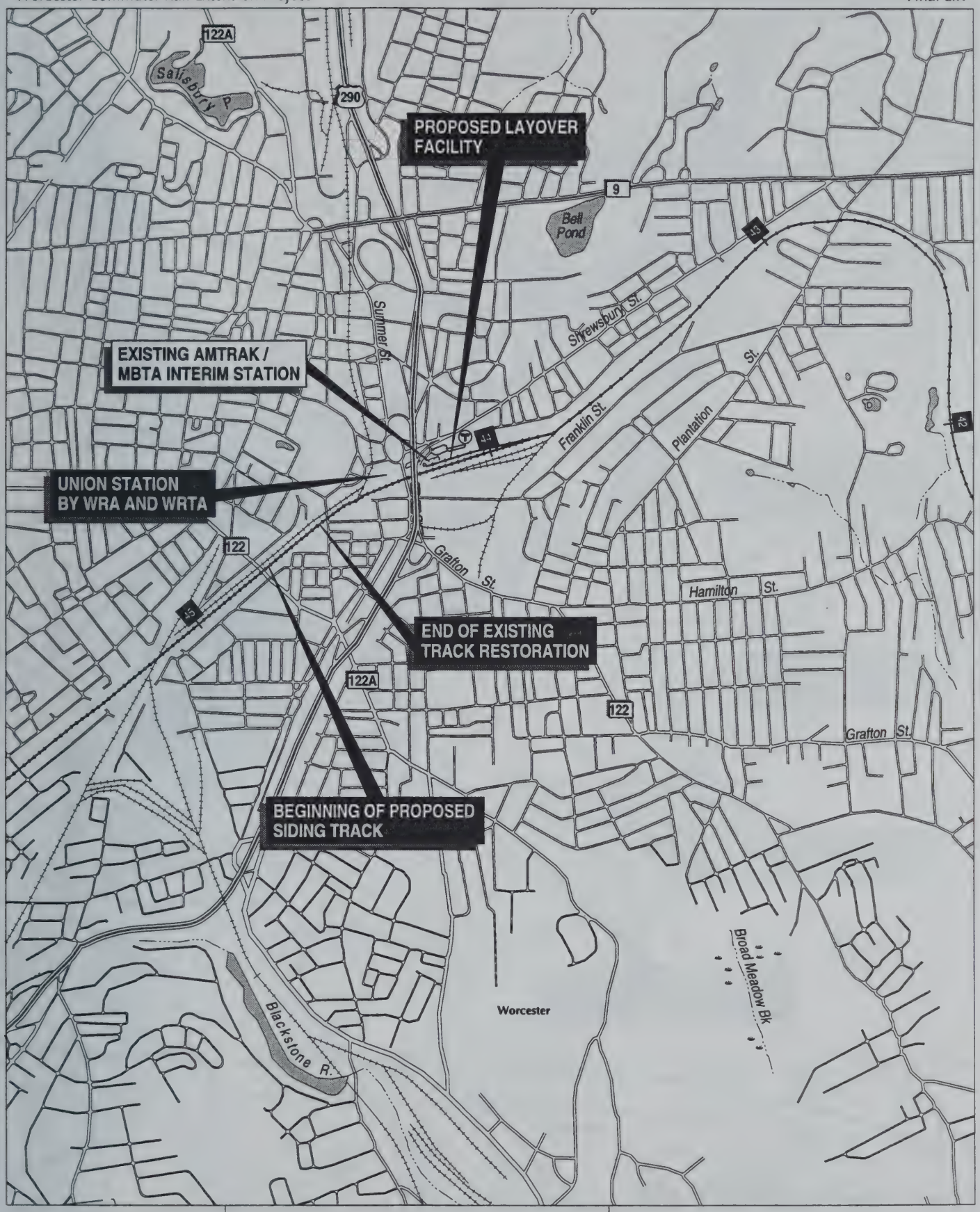
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 1 OF 9



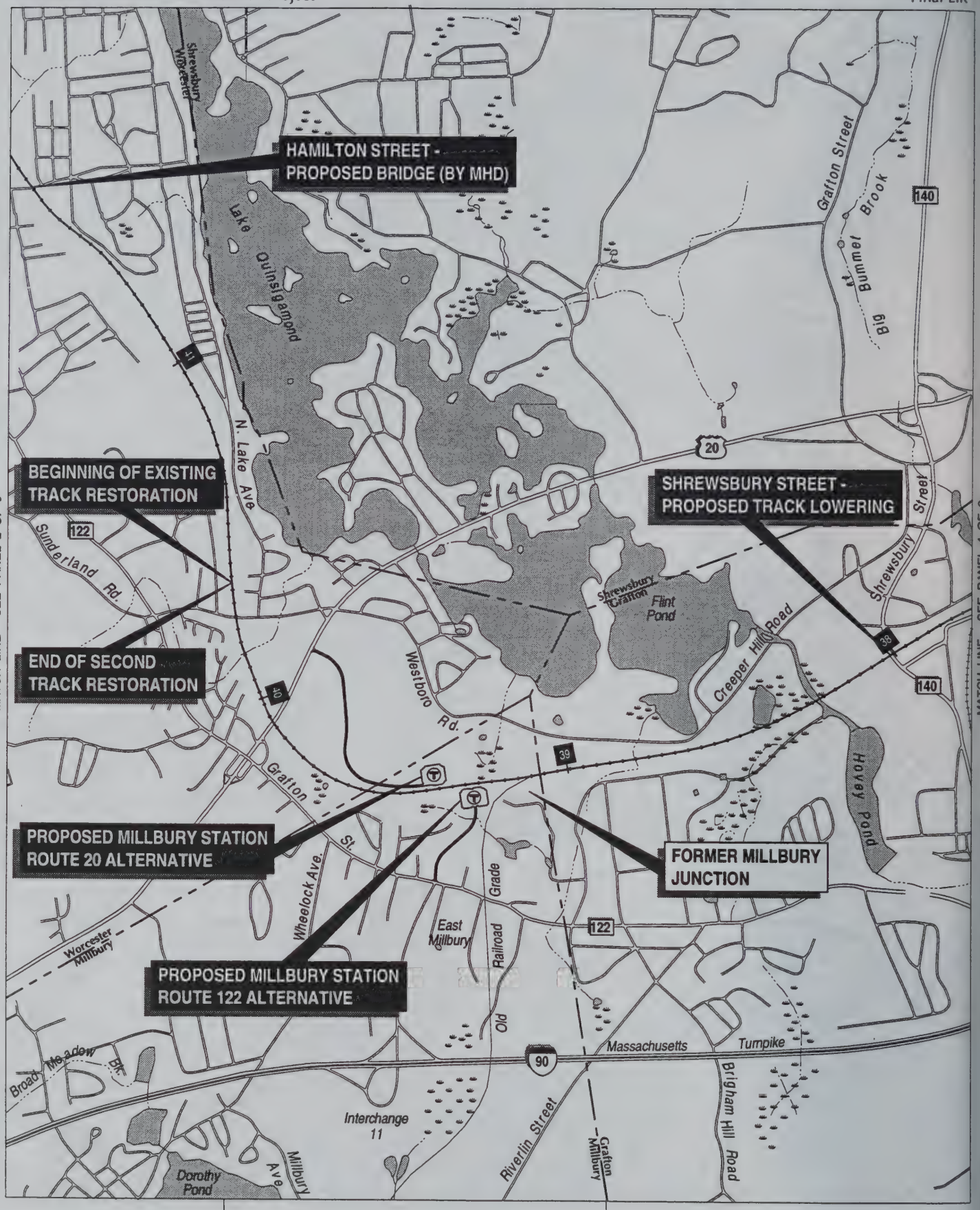
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 2 OF 9



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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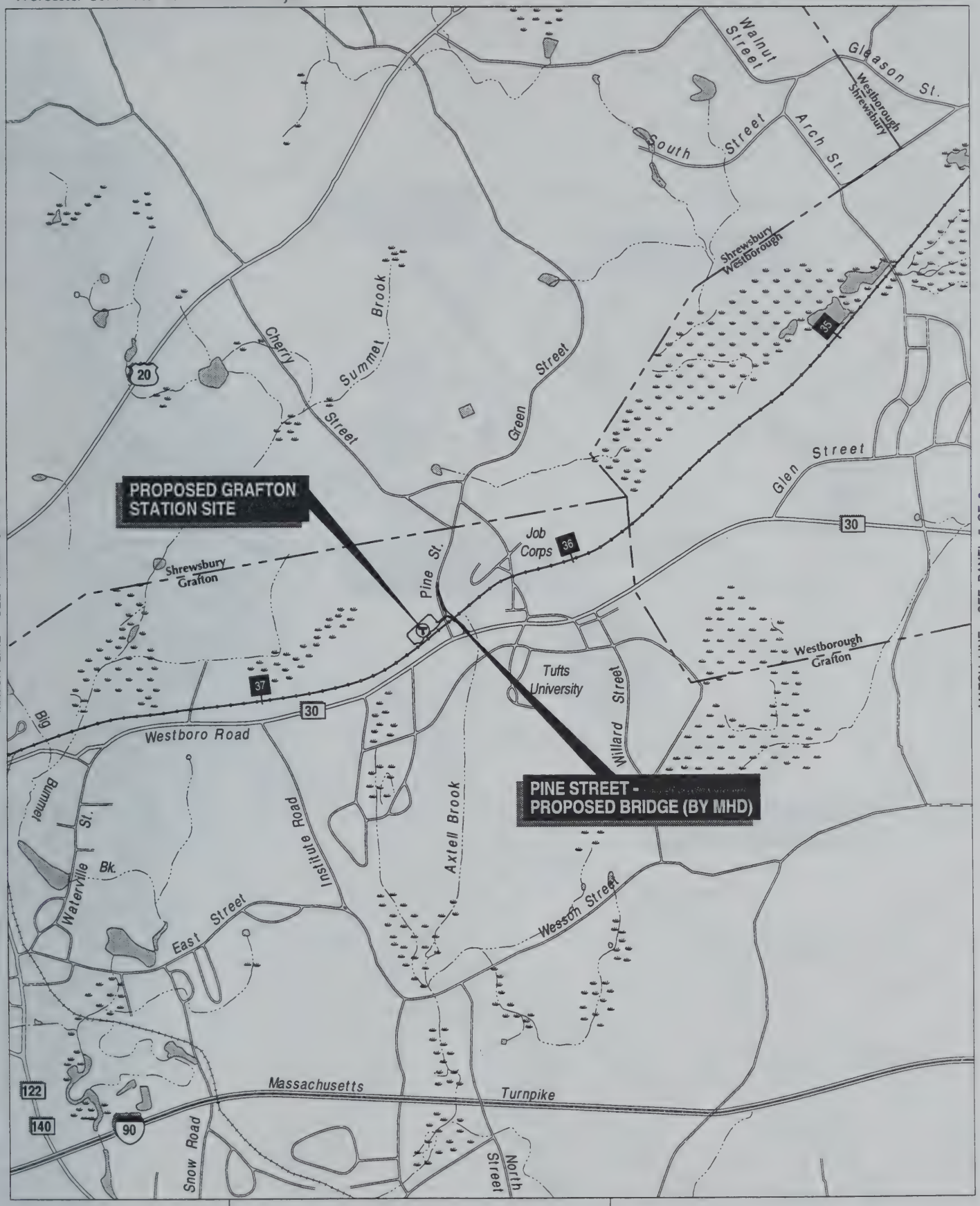
PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 3 OF 9



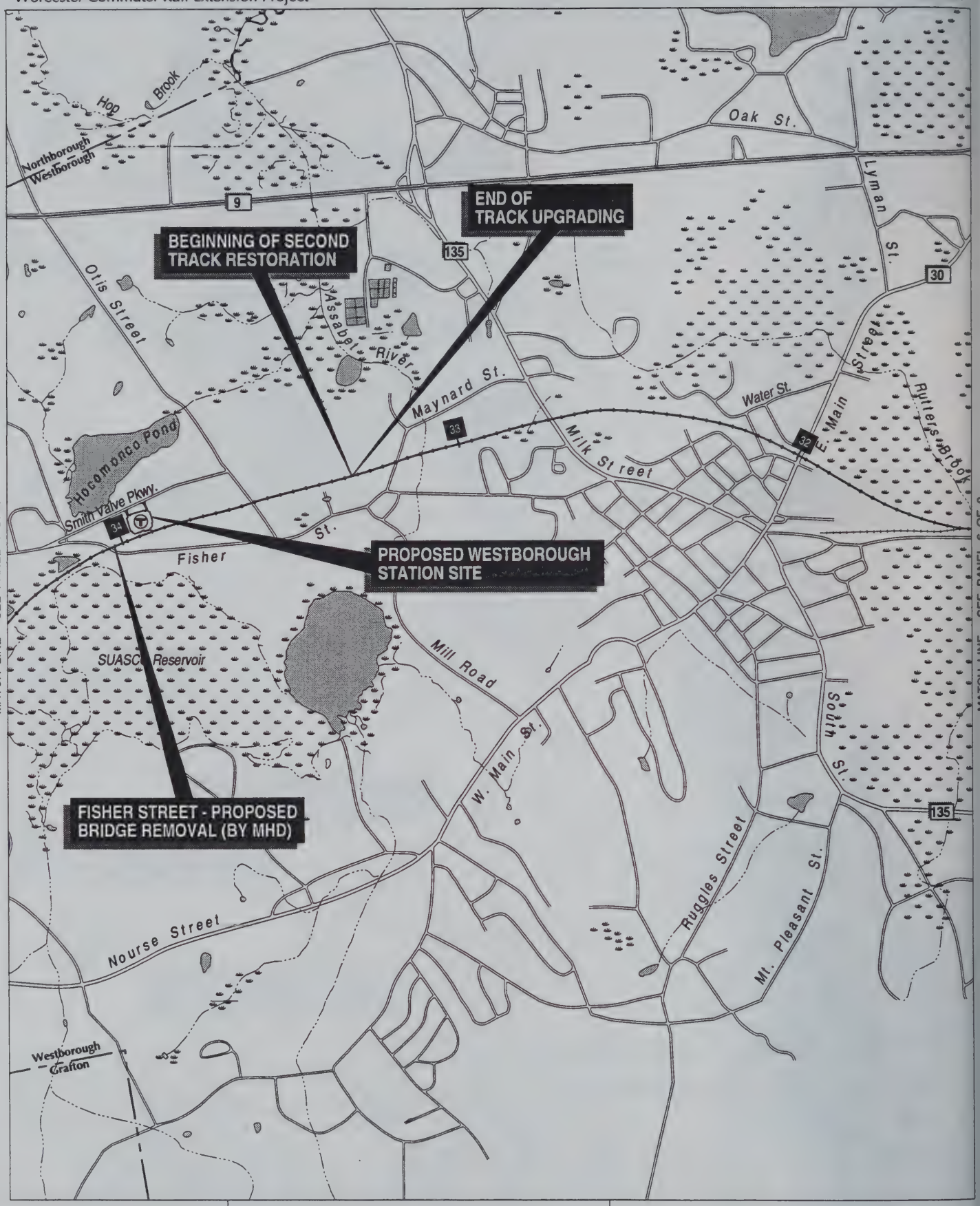
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 4 OF 9



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 5 OF 9

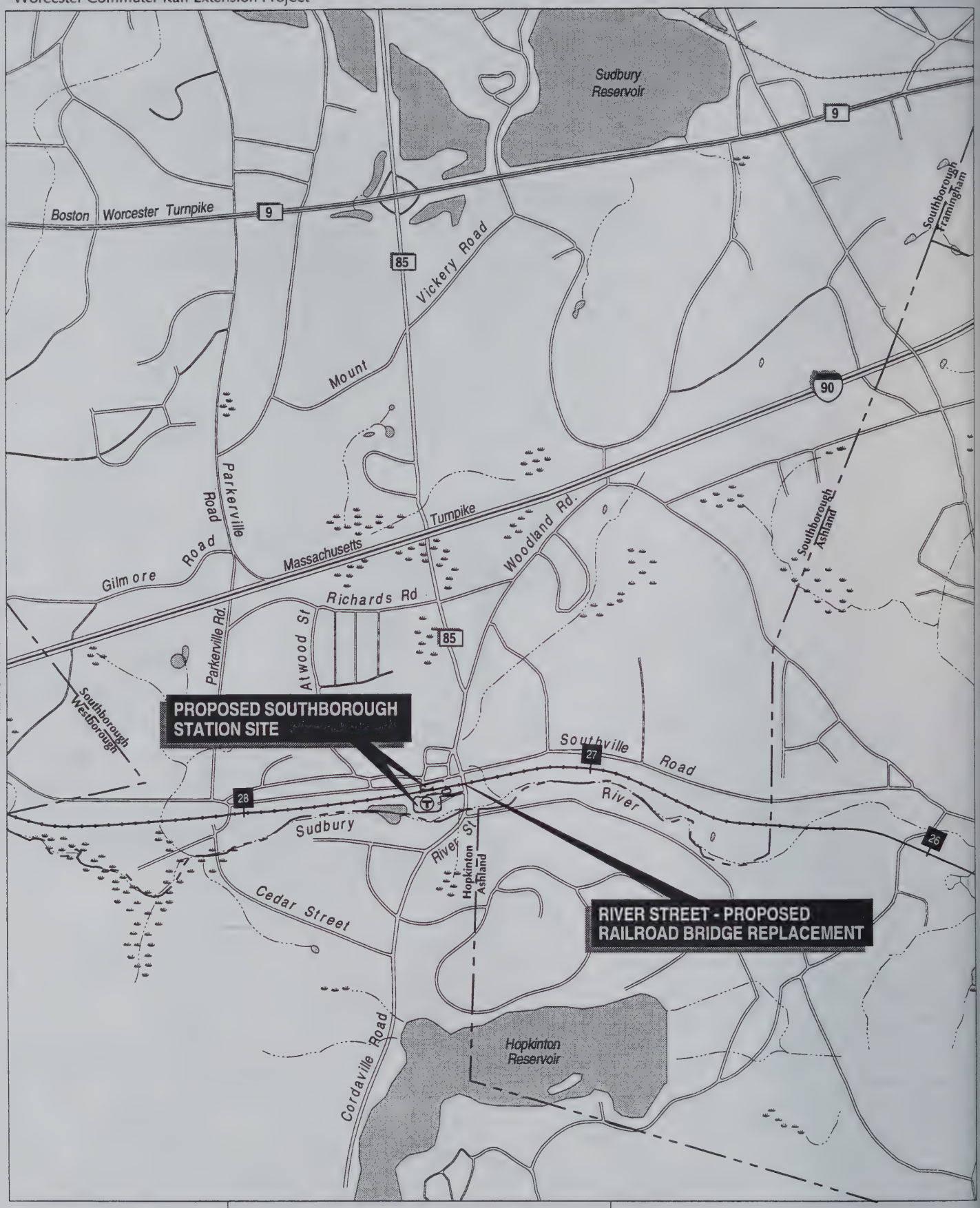
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 6 OF 9



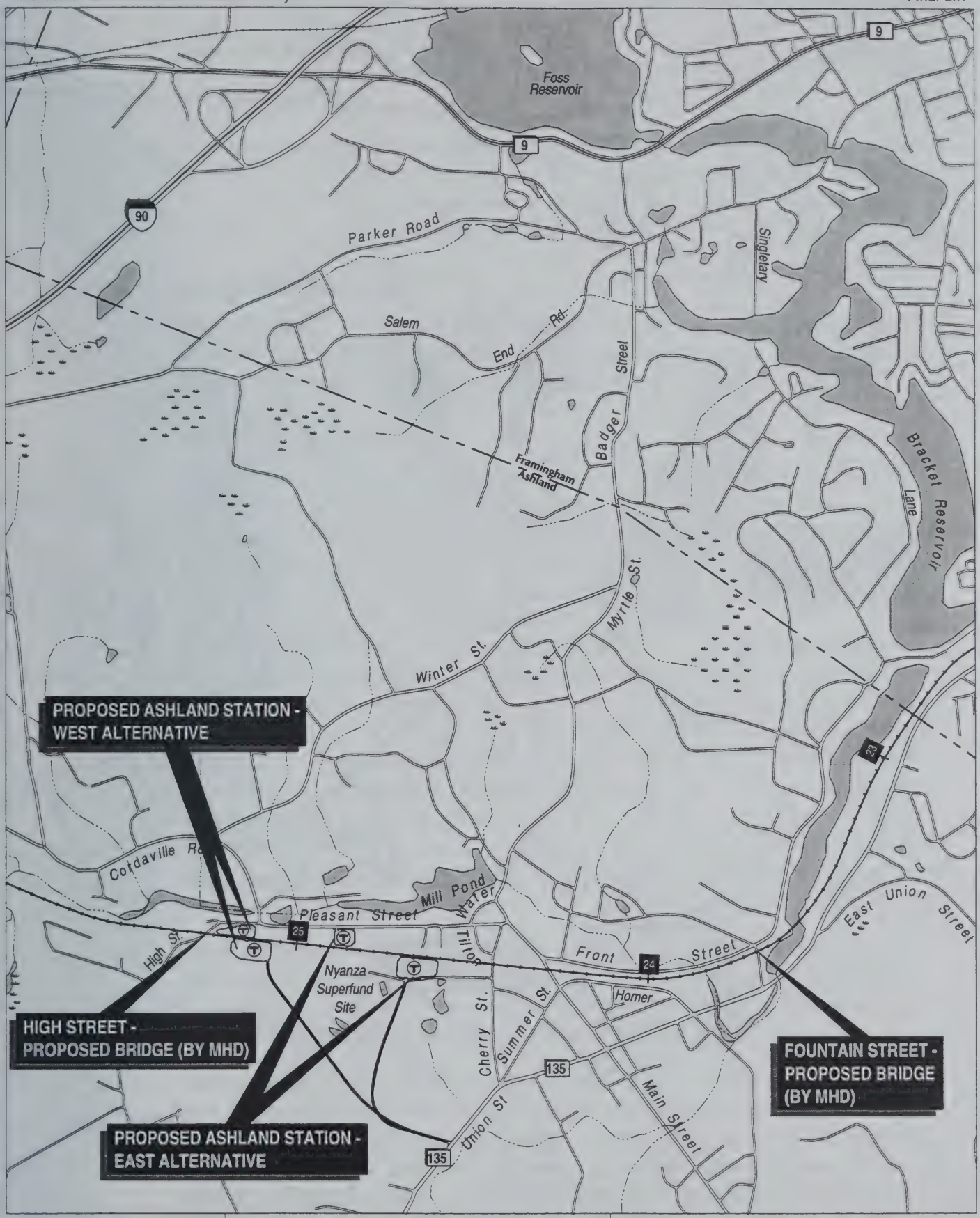
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 7 OF 9



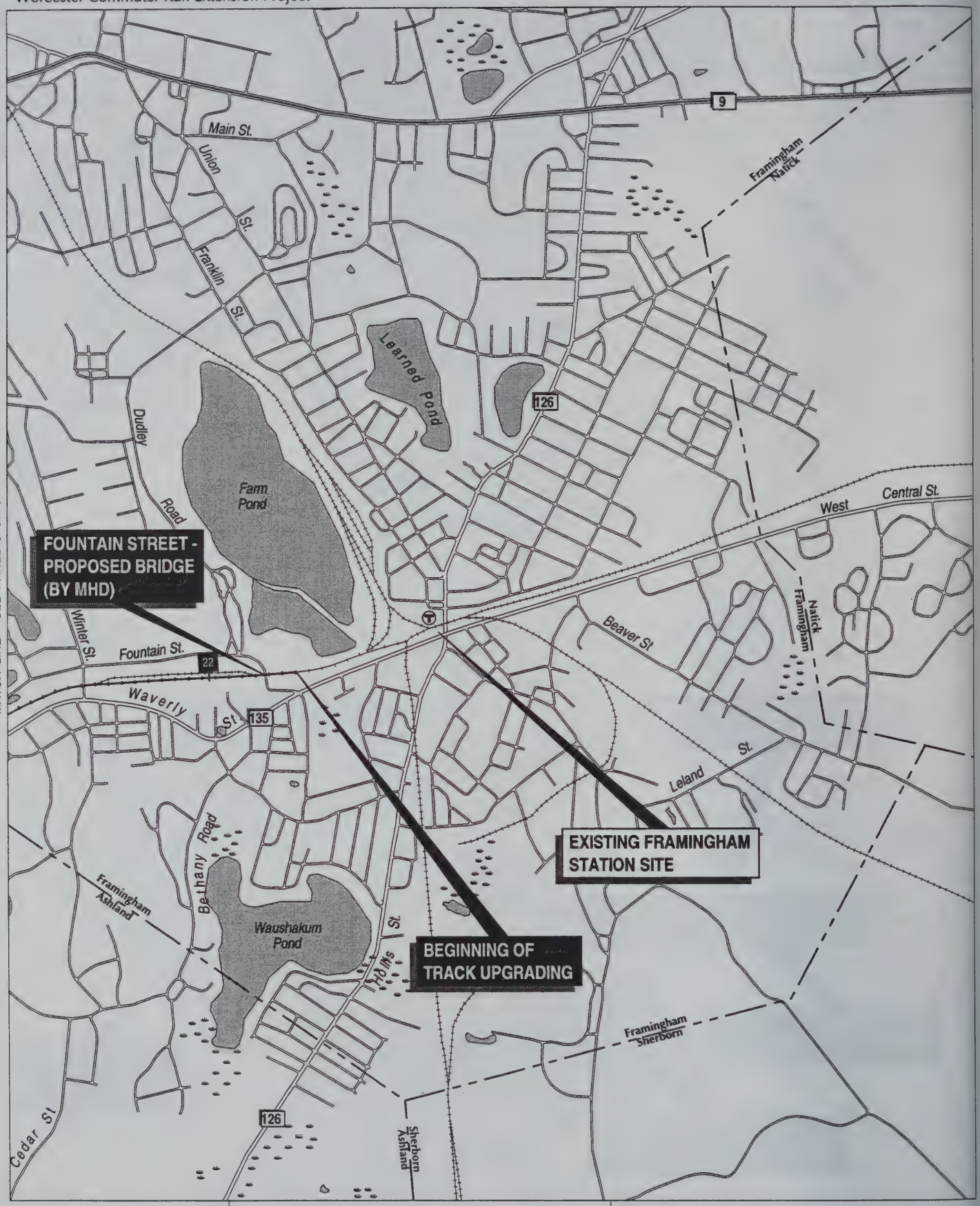
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 8 OF 9



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

PROPOSED RAILROAD CORRIDOR IMPROVEMENTS

FIGURE 3.1-1 PANEL 9 OF 9

restoration segment will receive the necessary construction materials via rail, new ballast material for this segment of the project will be delivered to staging areas via truck. Removal of materials from the segment is anticipated to be minimal since excavated material will be used for right-of-way filling and grading.

Milepost 40.3 - Milepost 44.4

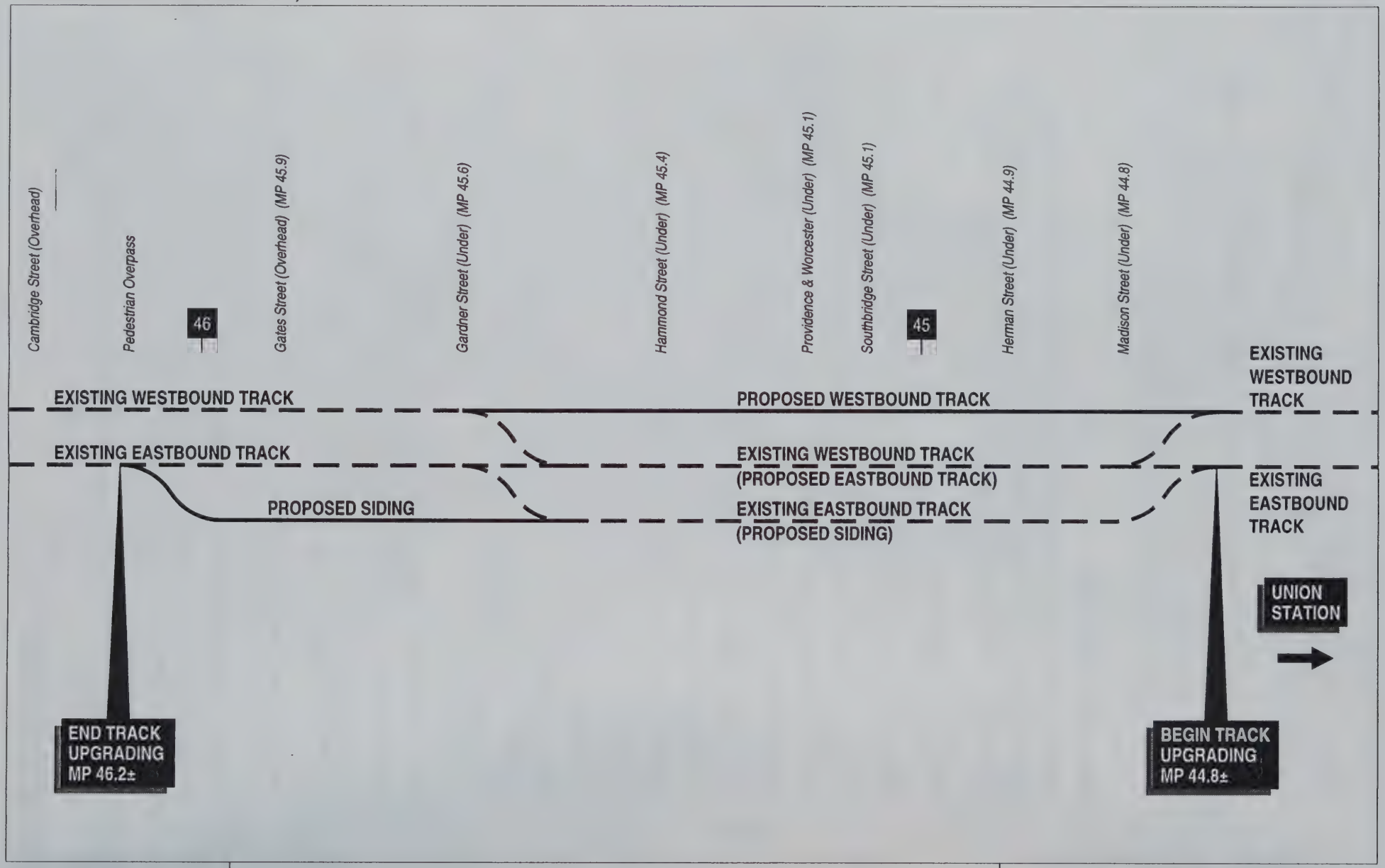
From MP 40.3 to MP 44.4 in Worcester, the rehabilitation of the eastbound track (currently used by Conrail as a siding for the temporary storage of freight cars) will include some wood tie replacement and the installation of continuous welded rail.

Milepost 44.8 - Milepost 46.2

After publication of the DEIR in November 1994, it was determined by Conrail that some additional siding track would be required to replace the siding track function of the eastbound track between MP 40.3 and MP 44.4. The new siding track will be located just west of Union Station over a distance of 1.4 miles between MP 44.8 and MP 46.2. The existing two track system, generally on an embankment section elevated above adjacent features, runs southwesterly bridging over Madison Street (MP 44.8) , Herman Street (MP 44.9), the P&W Railroad and Southbridge Street (MP 45.1), over Hammond Street (MP 45.4), over Gardner Street (MP 45.6), under Gates Street (MP 45.9), and ends near the overhead pedestrian bridge at MP 46.2. See Figure 3.1-2. From Madison Street, a new westbound track will be installed on the northerly side of the right-of-way for a distance of about 3,900 feet. The existing westbound track will become the eastbound track and the existing eastbound track will become the siding track. The tracks then transition to meet the existing westbound and eastbound tracks with the new siding track being installed over a distance of about 2,500 feet on the southerly side of the Conrail right-of-way. The new siding connects to the existing eastbound track near the pedestrian overpass at MP 46.2.

Land use in the area is primarily Conrail. East of the replacement siding is Conrail's multi-modal freight yard, running along the back side of Union Station and continuing east opposite the commuter rail Interim Station. This facility is currently in use and will not require any operational changes under this project.

The new siding track installation will be in areas of existing trackbed where the former track has been removed. Little or no work is anticipated in the sub-ballast areas. Re-working of the existing ballast or the installation of new ballast material will be required. No actual excavation of previously undisturbed ground will occur. Very minor filling to establish proper track elevation will be required over most of the 1.4-mile project length. Filling of up to 3 feet within a 10 foot strip will be required over a length of approximately 900 feet near the westerly terminus. A low retaining wall, which exists



Massachusetts Bay Transportation Authority

Approx. Horiz. Scale: 1" = 1500'
0 1500
Not to Scale Vertically

PROPOSED 1.4 MILE TRACK SIDING - SCHEMATIC WORCESTER, MA

FIGURE 3.1-2

along the southerly side of the railroad right-of-way, will retain any fill material. This area, which was previously level with the remaining railroad right-of-way, was excavated by Conrail to provide a pooling area for surface runoff due to drainage problems.

The existing drainage system in this area was damaged beyond repair. Approximately 900' of new drainage will be installed to replace the damaged system. This work will include approximately 100' of street excavation along Walpole Street to tie the new system into an existing city stormdrain manhole.

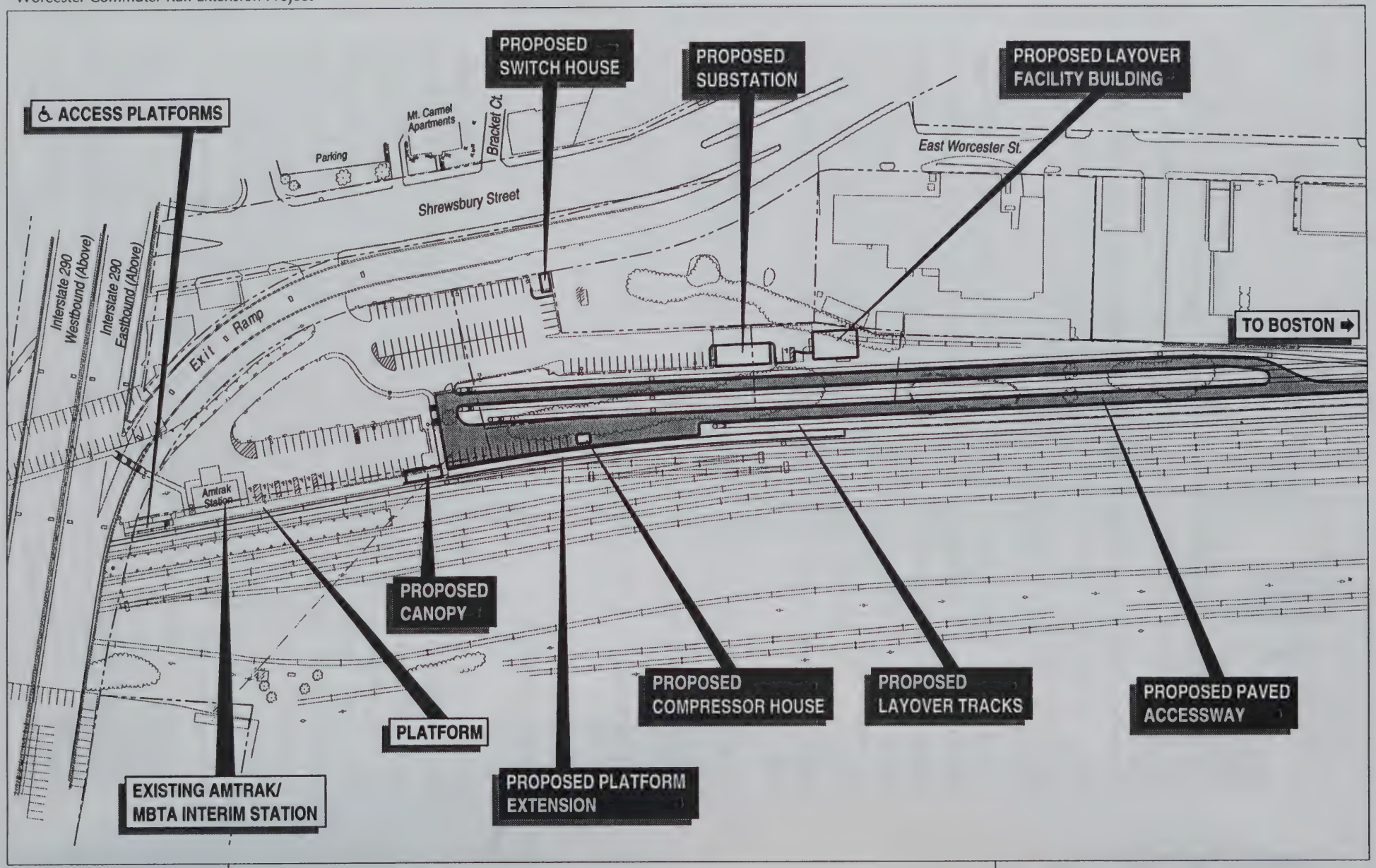
Conrail's multi-modal facility unloads container and trailer trains for local area distribution by truck. The empty trailer cars are stored temporarily and then hauled out of Worcester back to another loading facility. Normally, Conrail will have sufficient storage capacity for empty cars within its yard. When these tracks are temporarily full, the overflow will be placed on the new replacement siding. Utilization of this siding for storage will vary according to rail traffic. Conrail estimates use of the track will be between 3-4 times a week and once a day, with all shifting being done during daylight hours.

The empty trailers cars will be pushed out of the multi-modal facility, from east to west, onto the siding with the locomotive operating on the east end. No loading, unloading, or maneuvering of cars will take place on the siding.

Potential impacts of the railroad corridor improvements are described in Section 4.

3.2 Layover Facility

The proposed layover facility location is an existing rail yard east of the Amtrak Worcester Station at Mile Post 43.5. It is adjacent to the Amtrak station which is being used as the Worcester terminus for Interim Service. A site plan of the proposed layover site with preliminary track layout is shown in Figure 3.2-1. The layover facility has been proposed near the Worcester terminus, rather than nearer Boston, because the Worcester location will eliminate the movement of empty trains (deadhead movement) back to a central facility at night and out to the Worcester station in the morning where service initiates. Trains originating in Boston would provide for the reverse commute to Worcester. The proposed Worcester site can accommodate four train sets with the necessary support facilities. The support facilities include an electrical substation, a maintenance building, a compressor house, and associated access driveways and employee parking. It is located within an existing railroad area and an automobile junkyard. There are no sensitive environmental areas on site, such as wetlands or municipal water supplies. The surrounding land use is mostly industrial and includes



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 150'

0 150

SITE PLAN - LAYOVER FACILITY WORCESTER, MA

FIGURE 3.2-1

Conrail yards, the Worcester Department of Public Works garage, Interstate 290, ramps, and Shrewsbury Street. An elderly housing facility is near the site but is separated from the layover facility by Shrewsbury Street and the exit ramp from I-290.

The layover facility site selection process and evaluation criteria are described in Section 5.0. The environmental impacts of the proposed layover facility are described in Section 6.0.

3.3 Commuter Rail Fares and Schedule

The proposed Worcester Extension fare structure is identical to that of other MBTA commuter rail lines and uses a zone assignment for each station stop based on travel distance from the terminal station in Boston. Table 3.3-1 shows proposed zone assignments for new stations on the Worcester commuter rail extension and the current fare structure for those zones; the fares shown are those pertinent to typical commuters to Boston.

Table 3.3-1 Proposed Zone Assignments and Fare Structure Worcester Commuter Rail Extension

Proposed Station	Proposed Zone	Fare Structure		
		One Way	12 Ride	Monthly Pass
Ashland	6	$3.50	$35.00	$112.00
Southborough	6	3.50	35.00	112.00
Westborough	8	4.00	40.00	128.00
Grafton	8	4.00	40.00	128.00
Millbury	8	4.00	40.00	128.00
Worcester	9	4.75	47.50	136.00

Under the provisions of the MEPA Certificate issued for the November 1993 Notice of Project Change, Interim Service to Worcester began on September 26, 1994. This service provides three trains in the A.M. and P.M. peak commuting hours traveling express between Worcester and Framingham. Approximate train departure and arrival times and station stops between Framingham and South Station are shown in Tables 3.3-2 and 3.3-3. The Interim Service schedule does not accommodate reverse commuting and there is no weekend service.

By late 1996, as the intermediate stations are constructed, the train schedule will be increased to provide the proposed Basic Service consisting of 10 operations in each

direction per day. There will be four trains inbound to Boston during the A.M. commuting hours and five trains departing South Station during the P.M. peak hours. Approximate train schedules are shown in Table 3.3-4 and 3.3-5 and assume that all of the intermediate stations are constructed.

The schedules are presented in this document so that train movements and layover facility functions can be addressed. The schedules have been adjusted since the DEIR to eliminate excessive turn-around time during the off-peak hours.

The proposed Basic Service will include four A.M. peak hour trains making all stops between Worcester and Framingham, then express to Boston. The other six inbound trains also will make all stops between Worcester and Framingham (except one that is express to Framingham) and continue to Boston as part of the current Framingham to Boston scheduled service. The balance of the scheduled 15 trains from Framingham to Boston will be unaffected except for possible minor schedule adjustments.

Trains from Boston to Worcester will include four P.M. peak hour trains running express to Framingham, then making all stops between Framingham and Worcester. The other six outbound trains from Boston will make the regular Framingham line stops, then continue to Worcester making all station stops. The balance of the scheduled 16 trains from Boston to Framingham will be unaffected except for possible minor schedule adjustments.

Table 3.3-2 Interim Service - Worcester Commuter Rail Eastbound MBTA Trains Worcester to South Station

TRAIN	START TIME	ARRIVAL TIME	WORCESTER	MILLBURY	GRAFTON	WESTBOROUGH	SOUTHBOROUGH	ASHLAND	FRAMINGHAM	W NATICK	NATICK	WELLSQUARE	WELLHILLS	WELLFARMS	AUBURNDALE	W NEWTON	NEWTONVILLE	BACK BAY	SOUTH STATION
500	05:45 A.M.	07:02 A.M.	O						S	S	S	S	S	S	S	S	S	S	D
502	06:20 A.M.	07:20 A.M.	O						S									S	D
510	07:15 A.M.	08:15 A.M.	O						S									S	D

O = ORIGIN D= DESTINATION S= STOP

Table 3.3-3 Interim Service - Worcester Commuter Rail Westbound MBTA Trains South Station to Worcester

TRAIN	START TIME	ARRIVAL TIME	WORCESTER	MILLBURY	GRAFTON	WESTBOROUGH	SOUTHBOROUGH	ASHLAND	FRAMINGHAM	W NATICK	NATICK	WELLSQUARE	WELLHILLS	WELLFARMS	AUBURNDALE	W NEWTON	NEWTONVILLE	BACK BAY	SOUTH STATION
517	04:50 P.M.	05:55 P.M.	D						S	S								S	O
521	05:30 P.M.	06:49 P.M.	D						S	S	S	S	S	S	S	S	S	S	O
523	06:00 P.M.	07:00 P.M.	D						S									S	O

O = ORIGIN D= DESTINATION S= STOP

Table 3.3-4 Basic Service - Worcester Commuter Rail Eastbound MBTA Trains Worcester to South Station

TRAIN	START TIME	ARRIVAL TIME	WORCESTER	MILLBURY	GRAFTON	WESTBOROUGH	SOUTHBOROUGH	ASHLAND	FRAMINGHAM	WNATICK	NATICK	WELLSQUARE	WELLHILLS	WELLFARMS	AUBURNDALE	WNEWTON	NEWTONVILLE	BACKBAY	SOUTHSTATION
502A	06:00 A.M.	07:10 A.M.	O	S	S	S	S	S	S									S	D
504A	06:50 A.M.	08:00 A.M.	O	S	S	S	S	S	S									S	D
506	07:20 A.M.	08:40 A.M.	O						S	S	S	S	S	S	S	S	S	S	D
506A	07:40 A.M.	08:50 A.M.	O	S	S	S	S	S	S									S	D
510	08:10 A.M.	09:20 A.M.	O	S	S	S	S	S	S									S	D
514	11:30 AM	01:00 P.M.	O	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	D
518	03:05 P.M.	04:35 P.M.	O	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	D
520A	05:45 P.M.	07:05 P.M.	O	S	S	S	S	S	S	S	S	S	S	S				S	D
526	07:40 P.M.	08:50 P.M.	O	S	S	S	S	S	S									S	D
530	09:50 P.M.	11:20 P.M.	O	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	D

O = ORIGIN D= DESTINATION S= STOP

Table 3.3-5 Basic Service - Worcester Commuter Rail Westbound MBTA Trains South Station to Worcester

TRAIN	START TIME	ARRIVAL TIME	WORCESTER	MILLBURY	GRAFTON	WESTBOROUGH	SOUTHBOROUGH	ASHLAND	FRAMINGHAM	W NATICK	NATICK	WELLSQUARE	WELLHILLS	WELLFARMS	AUBURNDALE	W NEWTON	NEWTONVILLE	BACK BAY	SOUTH STATION
505	06:30 A.M.	07:50 A.M.	D	S	S	S	S	S	S	S	S	S	S					S	O
509	09:45 A.M.	11:10 A.M.	D	S	S	S	S	S	S	S	S	S	S	S				S	O
513	1:15 P.M.	02:45 P.M.	D	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	O
515A	04:25 P.M.	05:35 P.M.	D	S	S	S	S	S	S									S	O
519	04:40 P.M.	05:50 P.M.	D	S	S	S	S	S	S									S	O
521	05:25 P.M.	06:35 P.M.	D	S	S	S	S	S	S									S	O
521A	06:10 P.M.	07:20 P.M.	D	S	S	S	S	S	S									S	O
523	06:20 P.M.	07:50 P.M.	D	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	O
527	08:10 P.M.	09:40 P.M.	D	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	O
531	11:00 P.M.	12:30 A.M.	D	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	O

O = ORIGIN D= DESTINATION S= STOP

3.4 Implementation Schedule

As noted in the preceding section, Interim Service began operating on September 26, 1994.

Assuming that MEPA review, design, permitting, and construction proceed expeditiously, the intermediate stations would be on line by December, 1996 at which time the 20 train Basic Service would be implemented.

3.5 Construction Costs

Before the project proceeded to environmental review, it was the subject of a detailed feasibility report requested by the legislature. The feasibility report cost estimates do not reflect all the costs of the project as now proposed to MEPA, as the project has been somewhat redefined since the feasibility report. Two additional stations have been added, in Millbury and Southborough. These new stations will require additional signals and other infrastructure. Parking has been expanded beyond what the feasibility report covered. Revised cost estimates for required station access for the disabled have been incorporated. All told, the MBTA now estimates the project will cost $114 million, of which about $80 million will be for track and signal improvements, layover facility, stations and land acquisition costs, and impact mitigation, and $34 million for rolling stock. Table 3.5-1 provides a breakdown of the estimated construction costs. The MBTA plans to use state bond funds to cover the project's capital costs. Annual debt service will equal approximately $9.7 million, according to the MBTA's most recent estimate.

Table 3.5-1 Construction Cost Estimate

Project Element	Estimated Cost	Project Element	Estimated Cost
Track and ROW Improvements		**Layover Facility**	
Trackbed Preparation	$4,500,000	Track and Fencing	$2,000,000
ROW Fencing	$300,000	Electrical System	$1,800,000
Bridge, Wall, Repairs	$1,700,000	Lighting	$250,000
Noise and Vibration Mitigation	$1,200,000	Drainage and Grading	$200,000
Conrail Force Account Work		Crew Quarters and Parking	$800,000
New Interlockings (CP 22 to Worcester)	$7,740,000		
Second Track MP 33-40	$12,575,000	**Station/Parking Development**	
Cab Signals ("Cove" to CP 22)	$1,800,000	Ashland	$4,610,000
New Storage Track	$1,300,000	Southborough	$3,220,000
Track Improvements for 70mph	$2,150,000	Westborough	$2,819,000
New Crossover CP 45	$763,000	Grafton	$3,045,000
Retire CP 44	$707,000	Millbury	$3,306,000
Flagging	$755,650	Worcester	$1,500,000
		Land Acquisition	
		(station sites and layover)	$6,000,000
Subtotal	**$35,490,650**	**Subtotal**	**$29,550,000**
Total Rail and Site			**65,040,650**
3% Project Administration and Field Inspection			1,951,220
12% Contingency			7,804,878
8% Engineering Design			5,203,252
TOTAL CONSTRUCTION ESTIMATE			**80,000,000**
Rolling Stock: (4 train sets)			34,000,000
TOTAL PROJECT COST			**$114,000,000**

3.6 MBTA Mitigation Policy

The basic rule of thumb regarding mitigation of impacts resulting from the implementation of MBTA construction projects and other actions is that "if the MBTA breaks it, they will fix it." This policy is applicable to both the on-site and off-site impacts of the Worcester Commuter Rail Extension project. This mitigation policy has been discussed at Town Rail Committee meetings in March 1994 and at Citizens Advisory Committee (CAC) meetings. However, not all impacts cause "breakage". For example, with respect to traffic impacts resulting from commuter station generated traffic, some additional traffic at intersections and on roadway segments may not result in a significant impact, especially if the intersection or roadway will still operate at an acceptable level of service (LOS). If station generated traffic degrades the level of service from LOS D or better to LOS E or LOS F, corrective action will be proposed. If an existing condition reveals an unacceptable LOS for an intersection or roadway segment, and the addition of station generated traffic materially worsens that condition, every reasonable effort will be made to correct the problem created by the additional burden, generally in cooperation with MHD or the relevant town, according to jurisdiction. However, to mitigate such that the original deficiency is corrected may be infeasible in some cases. Moreover, "fixing," again using the traffic example, means restoring an acceptable level of service, LOS D in the project area, though often traffic mitigation will result in improvements well above LOS D.

Noise and vibration impacts resulting from the addition of commuter train operations are evaluated in terms of current and proposed Federal Transit Administration (FTA) criteria, supplemented by the Massachusetts DEP noise policy. Train noise that is considered highly annoying for a given land use category or that results in an increase of more than 5 dBA will be considered for noise abatement measures. Site specific evaluations will address potential control measures which could include a strictly enforced equipment maintenance program, sound barriers, and directional train horns. Although no vibration induced damage from train operations is predicted, ground-borne vibration generated by MBTA trains will result in the increase of vibration events per day, rather than higher levels. Where (depending on land use category) the increase in vibration events is considered to be significant, potential mitigation measures could include a strictly enforced equipment maintenance program and the installation of ballast mats.

Recently adopted MBTA policy provides for the expenditure of up to 2% of the project construction cost for noise and vibration impact mitigation. Consideration of the cost effectiveness of any noise mitigation measures must be weighted against the actual relief provided.

Wetland impacts will be mitigated through compliance with the appropriate regulatory requirements. The primary thrust of the right-of-way and commuter station design effort will be to avoid wetland, floodplain and drainage impacts. Where total avoidance is not possible, the design will seek to minimize any wetland alteration and, where alteration is unavoidable, will include construction methods and control measures to reduce short-term and long-term effects.

This FEIR will present mitigation proposals where applicable. Mitigation and local benefit possibilities will continue to be discussed with the relevant towns throughout the MEPA review and the design process.

SECTION 4.0 ENVIRONMENTAL IMPACTS – RAILROAD RIGHT-OF-WAY

Introduction

This section addresses the potential effects of track installation and related improvements along the railroad corridor between Framingham and Worcester, a distance of approximately 23 miles. Environmental resources along the corridor are depicted on the following pages on Figure 4.0-1, panels 1 through 9.

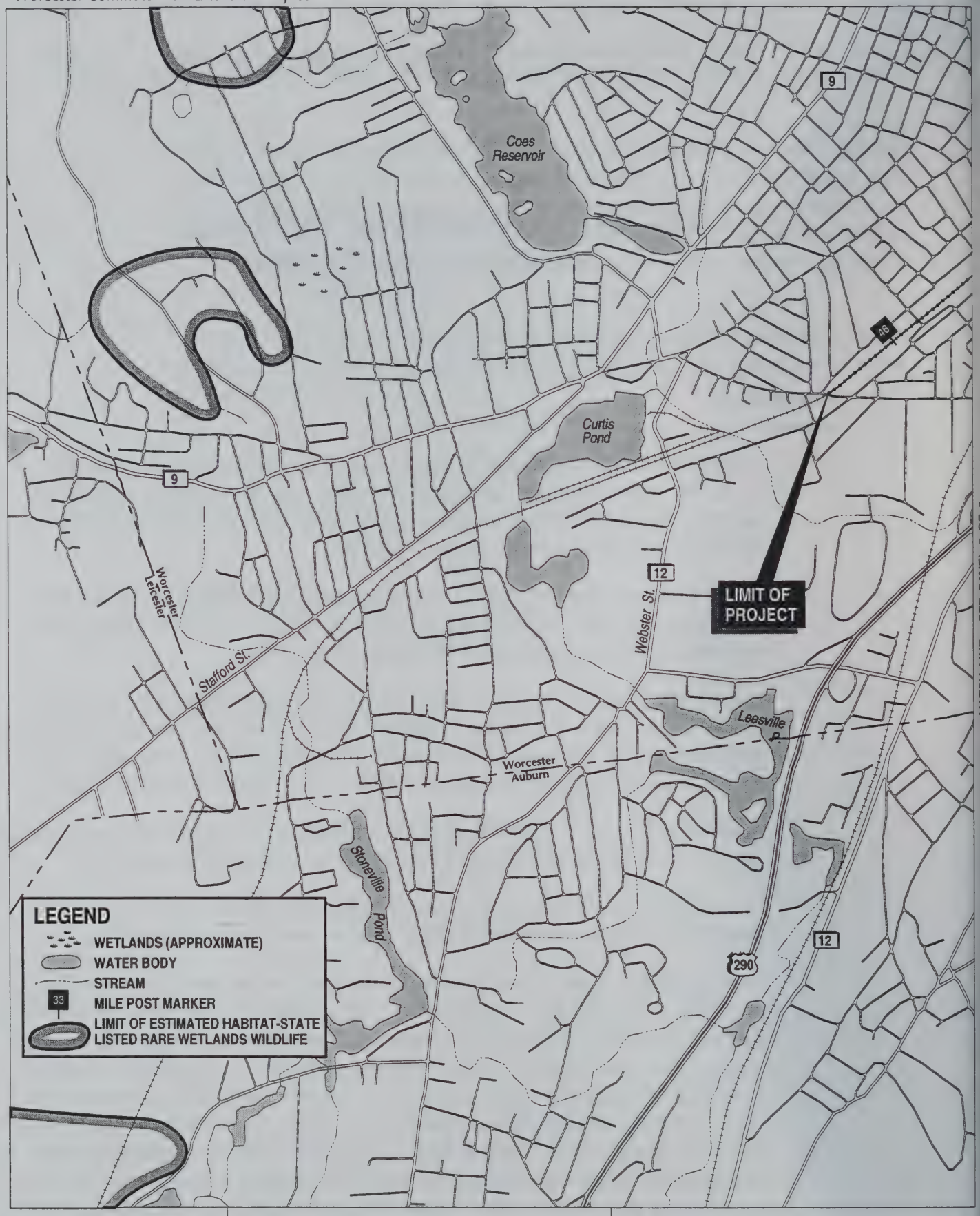
From MP 22 in Framingham to MP 33.2 in Westborough, the existing two track system will be upgraded to provide for 70 mph passenger service. The work will include spot tie replacement and track surfacing to allow increased train speeds.

Between mile posts 33.2 and 40.3, a second track will be restored, requiring a substantial amount of trackbed reconstruction to improve rail sub-ballast and wayside drainage. New ballast, ties and continuous welded rail will be installed. The focus of environmental impacts related to drainage and wetlands is this seven mile section of the rail corridor.

From MP 40.3 to MP 44.4 in Worcester, the rehabilitation of the eastbound track will include some wood tie replacement and the installation of continuous welded rail.

From MP 44.8 to MP 46.2 in Worcester, a replacement Conrail siding track will be installed in areas of existing trackbed where the former track has been removed.

Possible vibration impacts from operation of the commuter rail service have been re-evaluated. Additional field measurements were performed along the corridor to determine the effects of interim service trains. The results of the additional analyses and review of the more detailed corridor maps determined that 19 residences could be affected by vibration from MBTA commuter trains. With the exception of one multi-family unit, all potentially affected properties are isolated, single-family residences. All of the significant vibration impacts reflect annoyance or activity interference effects associated with indoor vibration and not building or structural damage. *In no cases do the projected train vibration levels along the corridor exceed or even approach the vibration damage criteria.*



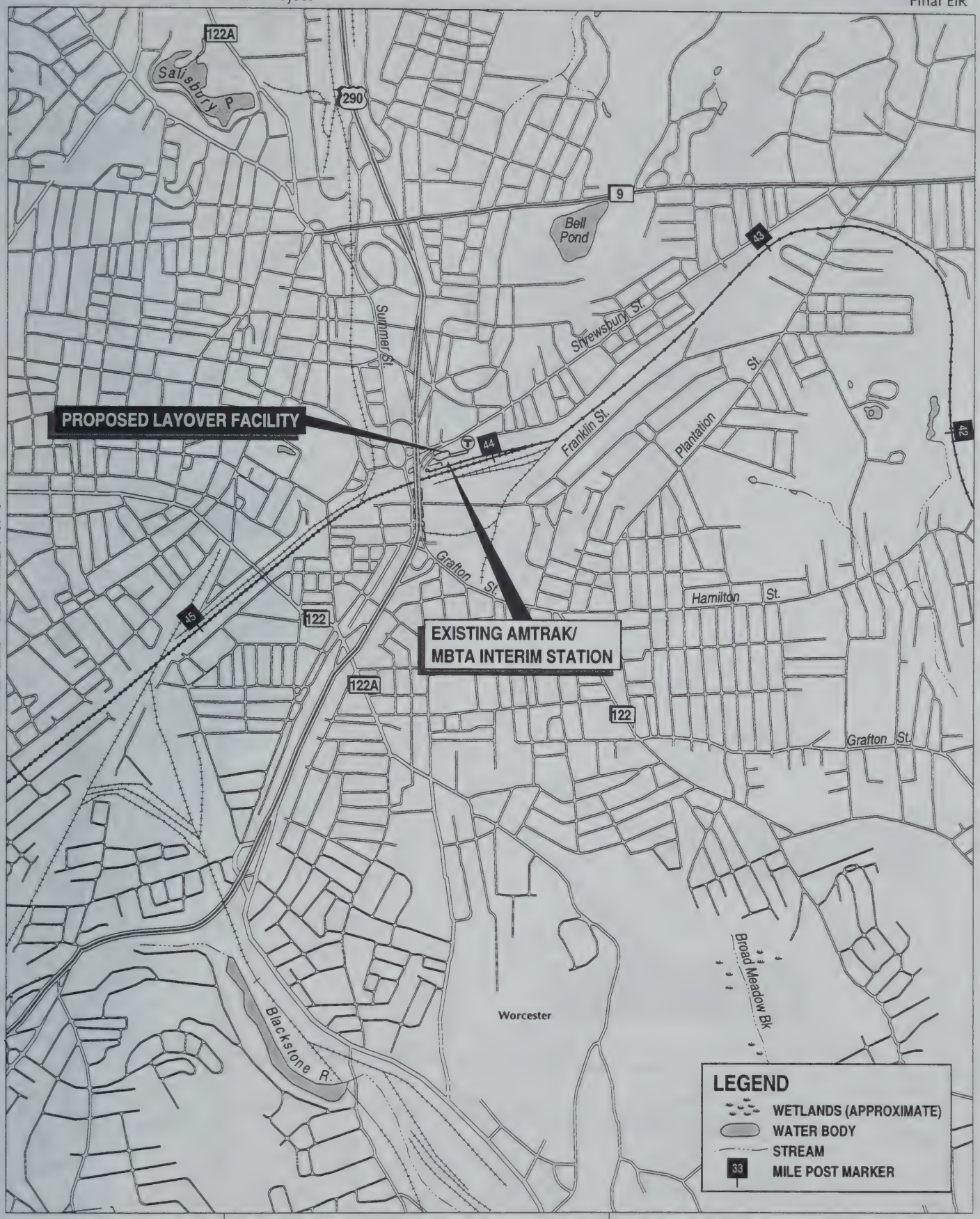
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

0 2000

ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 1 OF 9



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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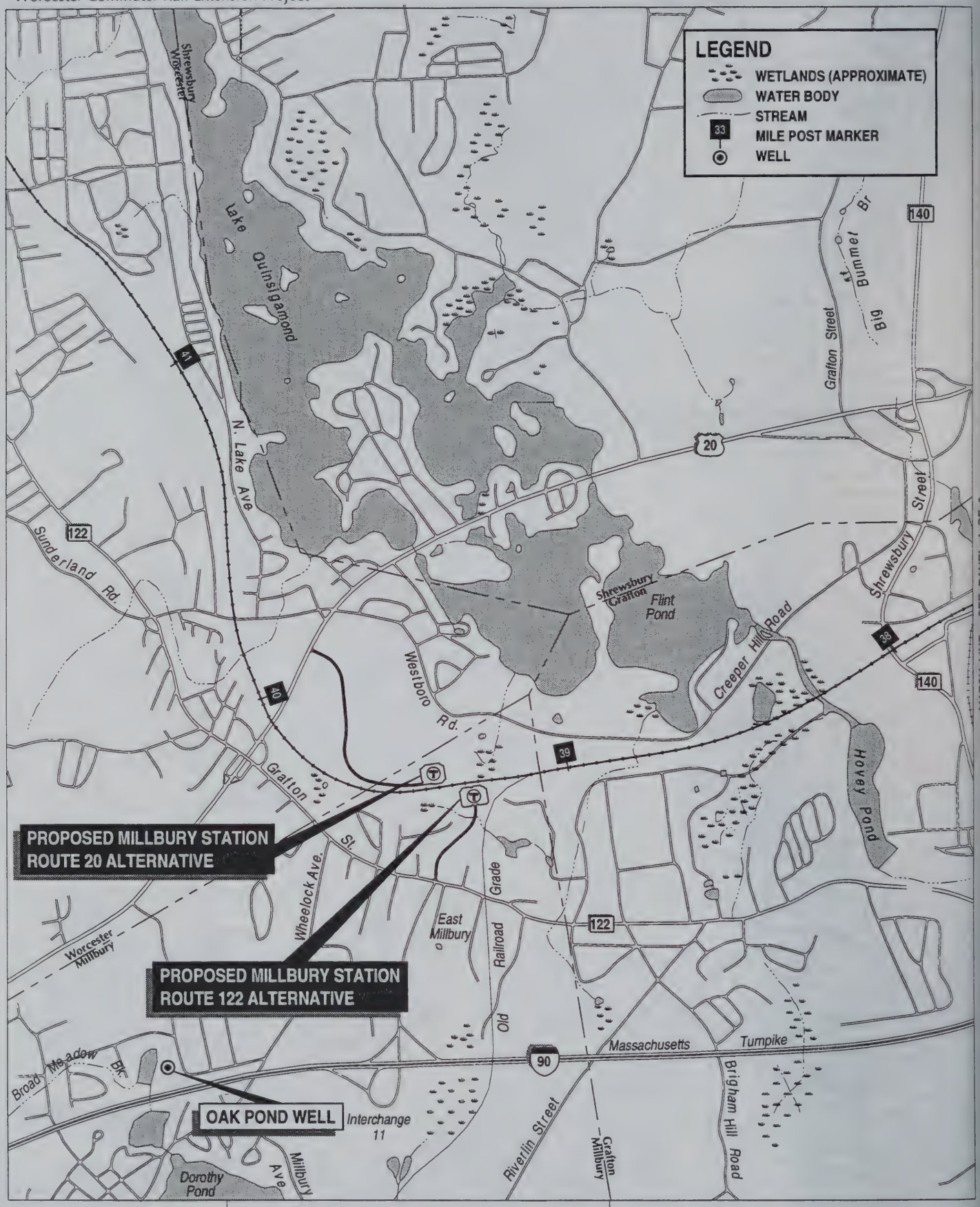
ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 2 OF 9



Massachusetts Bay Transportation Authority

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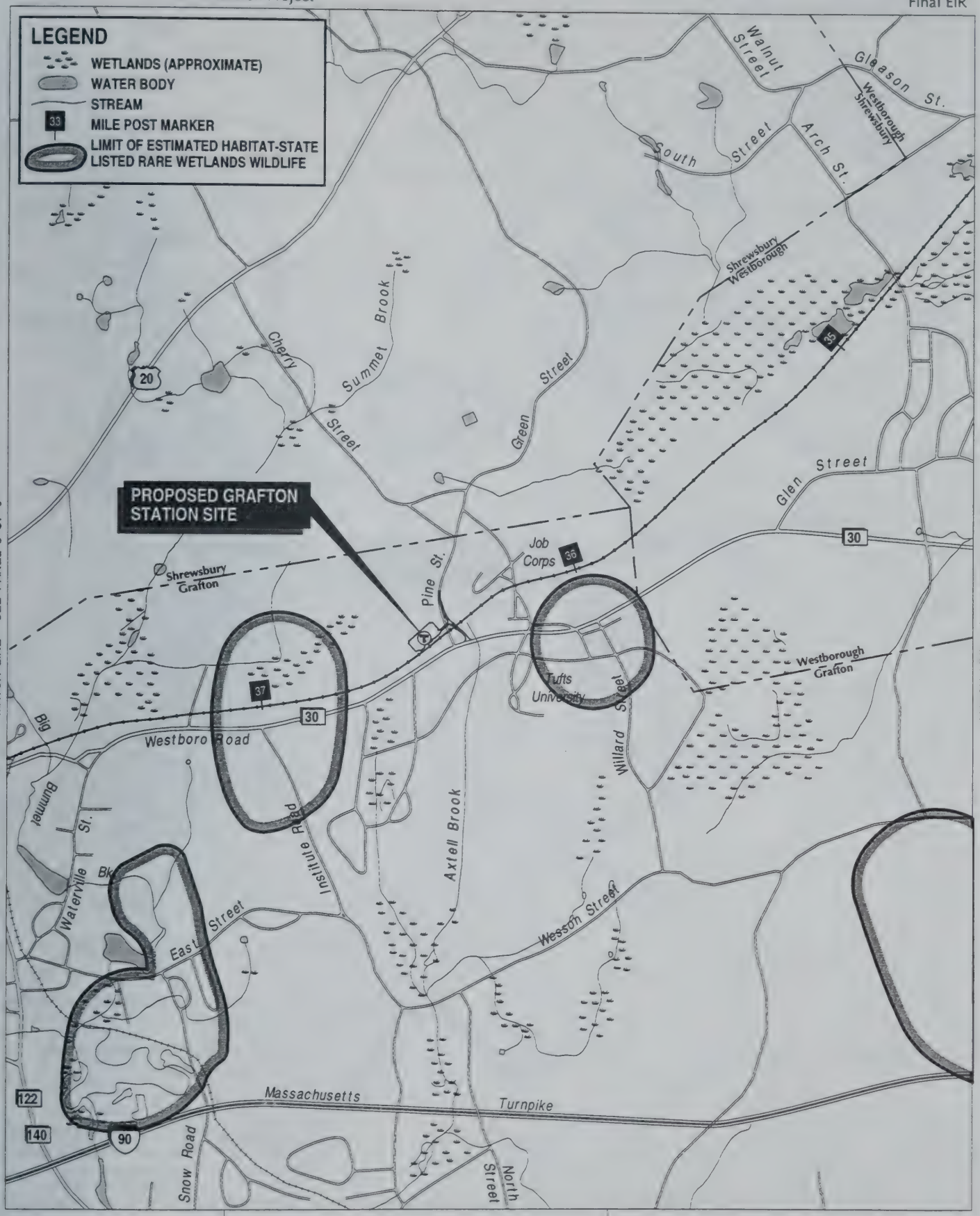
ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 3 OF 9



Massachusetts Bay Transportation Authority

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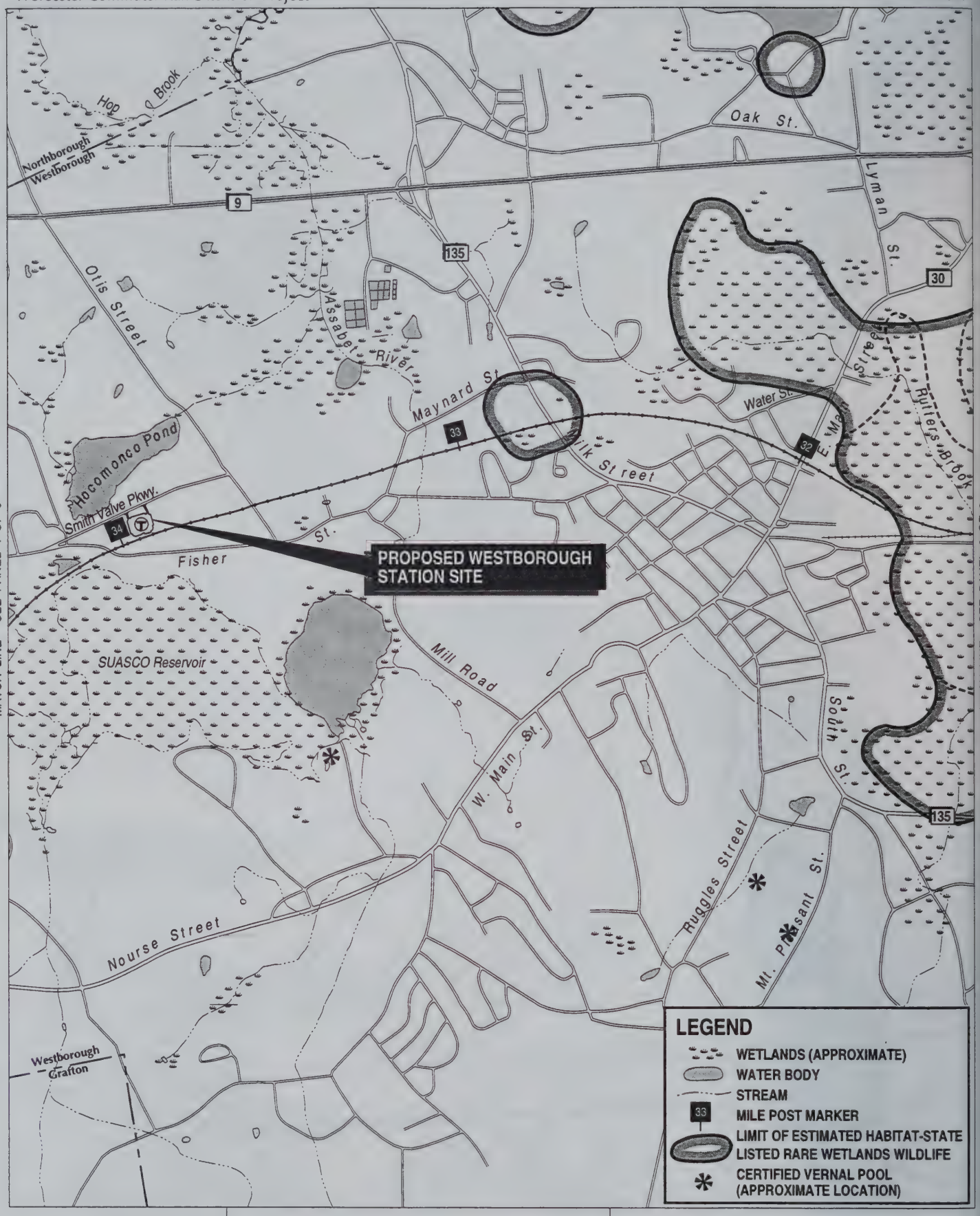
ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 4 OF 9



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 5 OF 9

Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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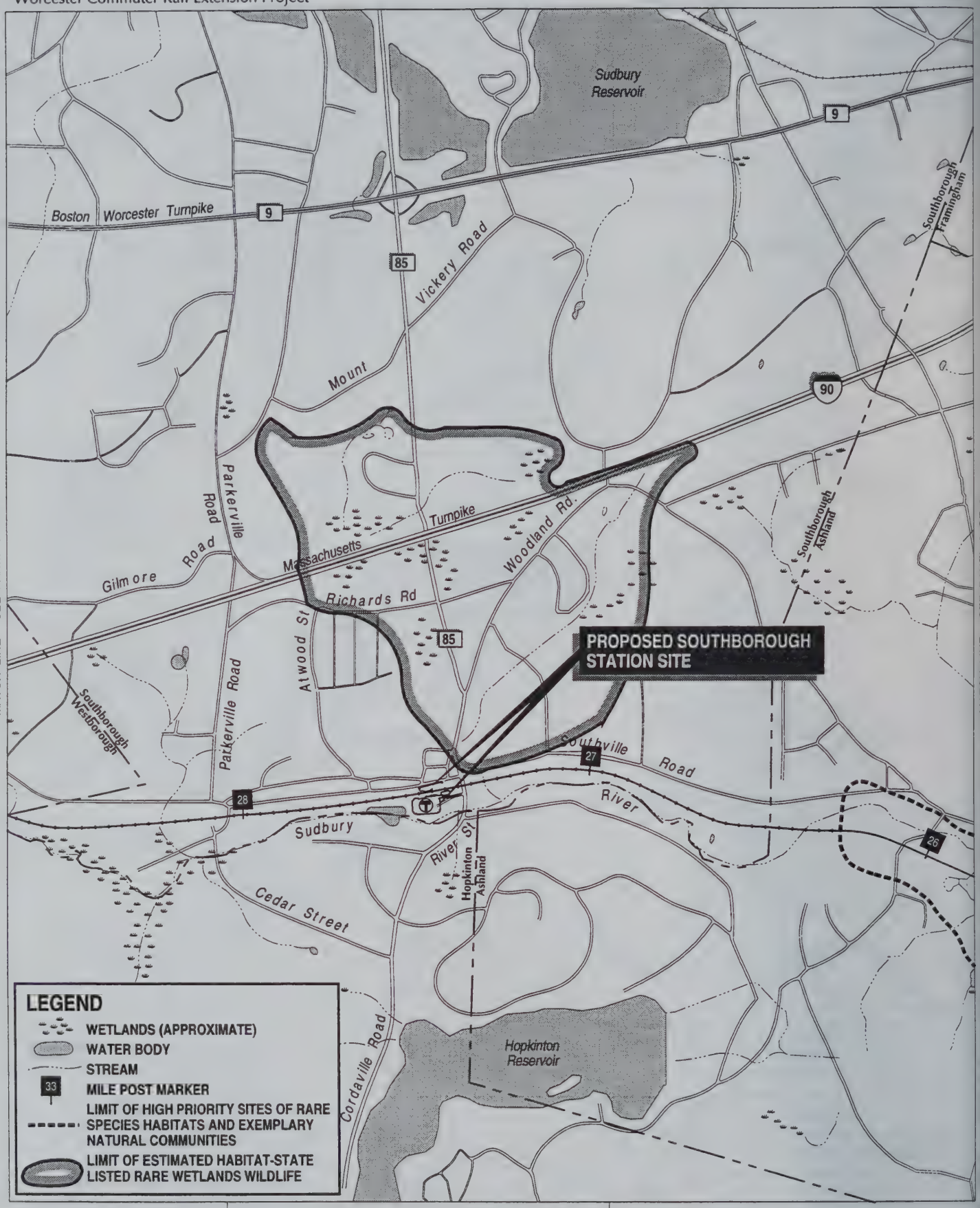
ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 6 OF 9



MATCH LINE - SEE PANEL 6 OF 9

MATCH LINE - SEE PANEL 8 OF 9

Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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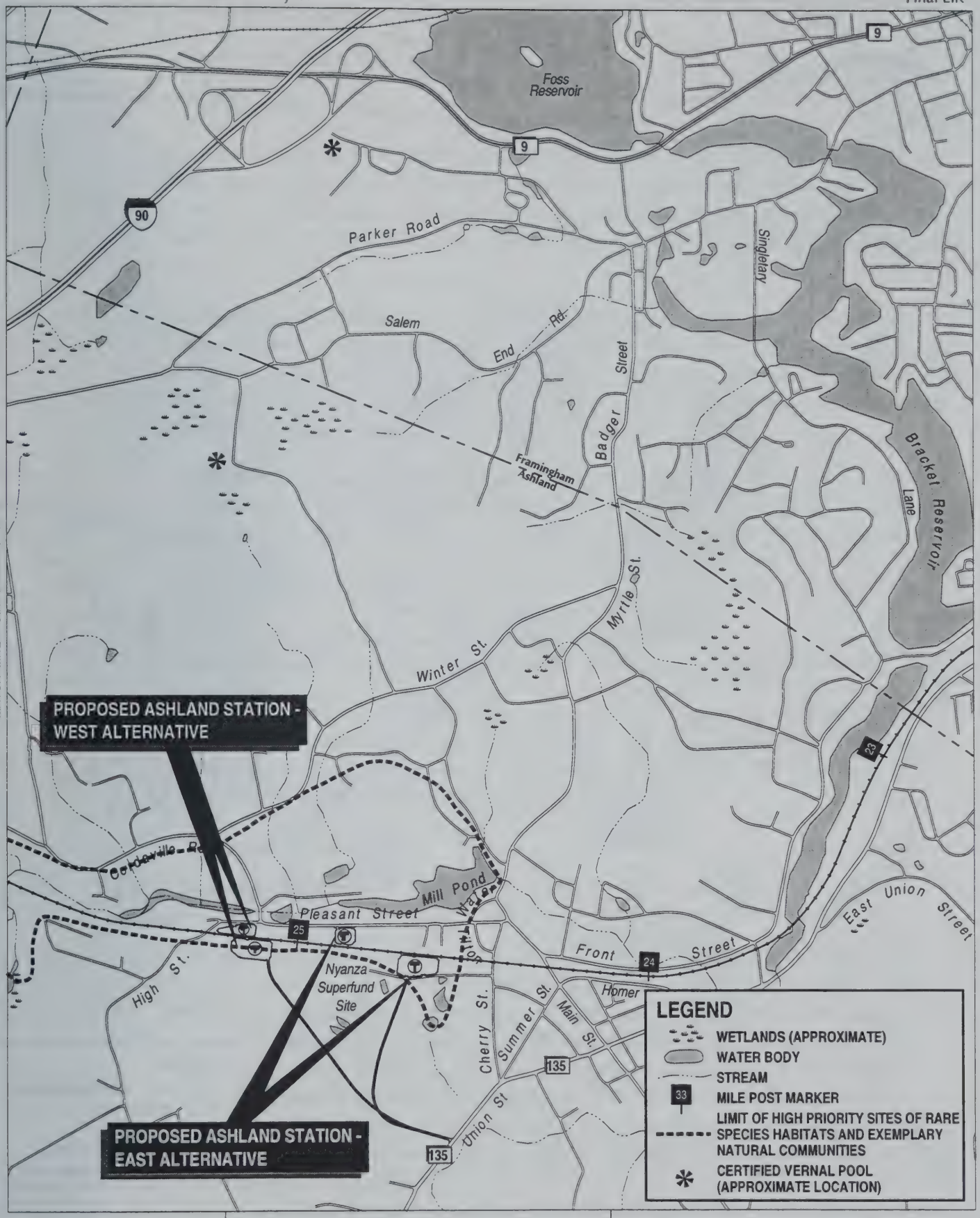
ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 7 OF 9



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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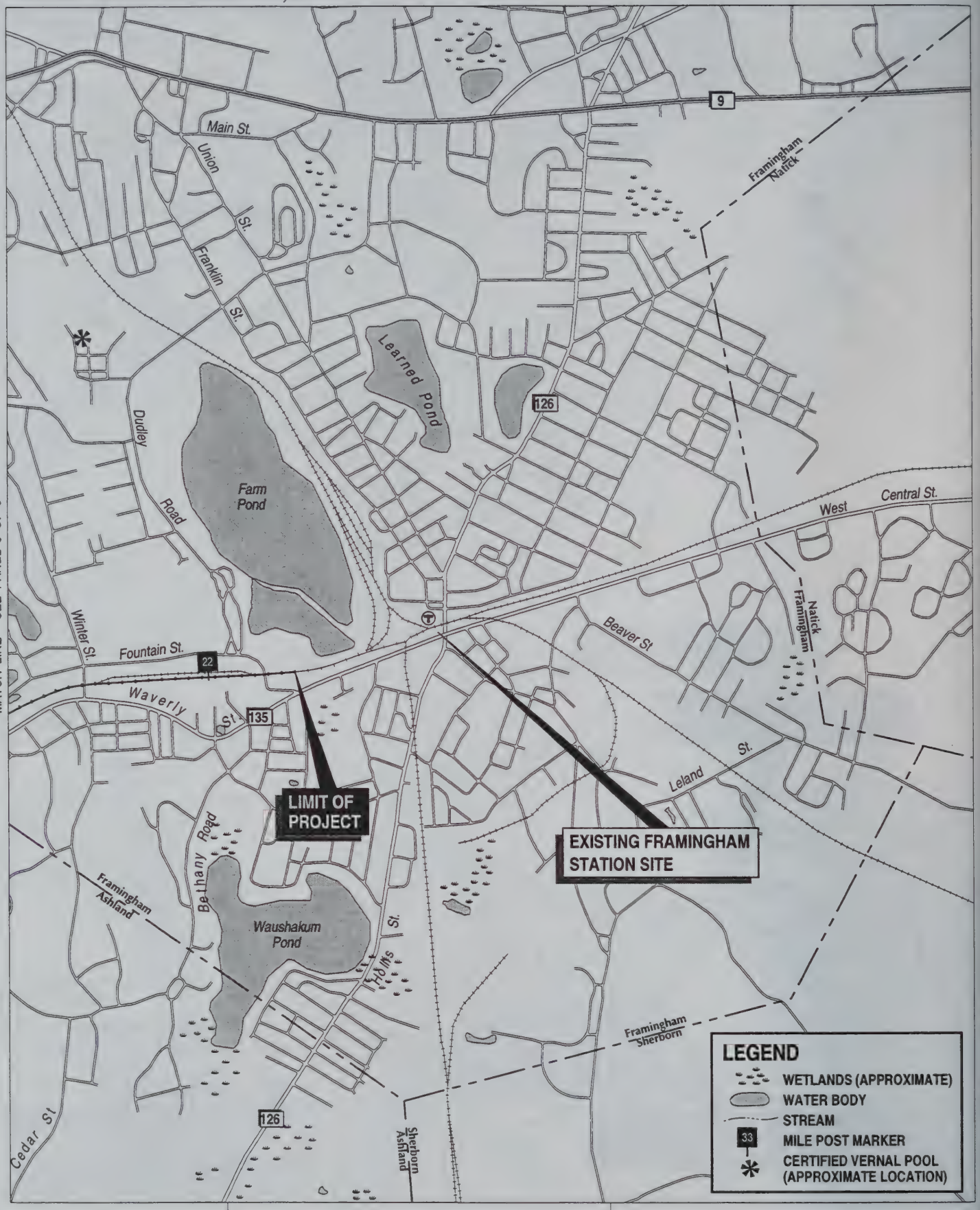
ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 8 OF 9



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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ENVIRONMENTAL RESOURCES PROJECT CORRIDOR

FIGURE 4.0-1 PANEL 9 OF 9

Restoration of double track along a seven mile segment of the rail corridor between Westborough and Worcester will include wayside drainage improvements. No new stream crossings will be required, although some minor alterations to existing crossings will occur. An estimated 180 square feet of bordering vegetated wetlands (BVW) will be altered.

Railbed improvements are being designed to minimize potential adverse effects on resource areas. Any work affecting resource areas or within the buffer zone will be reviewed by local conservation commissions and construction will be performed in compliance with any order-of-conditions that may apply. Notices of Intent have been filed with the appropriate local conservation commission.

The Natural Heritage and Endangered Species Program has been contacted regarding rare species and ecologically significant natural communities. Construction activity related to the proposed project will not occur within areas known to have records of rare species.

In accordance with the EOEA Certificate for this project, an architectural survey was conducted along the project corridor. Architectural survey forms for those buildings and structures which may be affected by the project (visual affects only) were completed and are being reviewed by the Massachusetts Historical Commission (MHC).

An archaeological and cultural resource reconnaissance survey of the rail corridor was performed in coordination with the MHC and the state archaeologist. Several archaeological resource areas were identified. In accordance with MHC regulations, an intensive archaeological survey is being performed.

4.1 Local Traffic

Construction of the replacement second track, between MP 33.2 in Westborough and MP 40.3 in Worcester, will involve the delivery of new ballast material via trucks. The deliveries are anticipated to be made to temporary staging areas appropriately spotted with respect to where the ballast is required and how access can be obtained to the railroad right-of-way. The ballast deliveries will be accomplished during normal working hours over a period of approximately two months. The details of staging and access have not been determined, but will be controlled by the construction documents in concert with local Police Departments. The traffic effects of ballast delivery on local streets are not anticipated to be significant.

Reconstruction of the Route 85 (River Street) railroad bridge in Southborough was described in Section 3.1 as it relates to the vertical clearance between the bridge and the

roadway. The existing 11-foot clearance is likely to be replicated. If an increased vertical clearance of approximately 12 feet were to be provided by the new bridge, it is anticipated that a small number of somewhat larger trucks might use Route 85 in this area. An increase to a 14'-6" clearance is not being considered at this time.

4.2 Air Quality

Internal combustion engines are a major source of air pollutants such as carbon monoxide (CO), hydrocarbons (HC), and oxides of nitrogen (NO_x). Diesel engines such as those in railroad locomotives, are also sources of oxides of sulfur (SO_x) and particulates.

Carbon monoxide and hydrocarbons result from incomplete combustion of fuels, while oxides of nitrogen result from burning fuel at high temperatures. The oxides of nitrogen and gaseous hydrocarbons play a role in the formation of photochemical oxidants, or smog; however, the impact of photochemical oxidants generally occurs a great distance away from the source of emissions. The effects of hydrocarbons and oxides of nitrogen are evaluated on a regional basis, rather than evaluating effects adjacent to the rail corridor.

The most obvious effect of locomotive exhaust is apt to be smoke, which consists primarily of particulates. The exhaust also contains oxides of sulfur, oxides of nitrogen, and minor amounts of unburned fuel. The unburned fuel is responsible for the odor associated with diesel engines.

Particulates have a short-term effect on local air quality adjacent to the tracks, in that these particles generally settle out of the air within a short time. There are, however, no accepted models available to address particulates emissions.

The line haul air quality effects of locomotive operations were described in terms of regional air quality in the DEIR. A revised analysis will be presented in the FEIR covering Commuter Rail Stations and Railroad Operations.

The potential effects of locomotive exhaust at the layover facility are described in Section 6.2.

4.3 Noise and Vibration

Since vibration impact and its mitigation measures are directly related to construction of the trackbed, the criteria, methodology and results of the vibration impact assessment from train operations are provided in this section. In contrast, noise impacts from train operations do not have a direct consequence on the railroad trackbed and will be addressed in the second FEIR, Commuter Rail Stations and Railroad Operations.

Vibration Impacts from Train Operations

Vibration Impact Criteria

Although the railroad corridor between Framingham and Worcester has been carrying both freight and intercity rail traffic for well over a century, the proposed addition of commuter train operations may affect the noise and vibration environment along the right-of-way. These changes relate primarily to an increase in train frequency, speeds and consists (consist refers to the make-up of the train, i.e., number of locomotives, coaches, freight cars, etc.).

Vibration impacts from train operations were assessed based on the projected root-mean-square (RMS) ground vibration velocity level (V_{dB}) measured on the exterior ground surface at the building line location closest to the track. This level is expressed in decibels relative to a reference velocity of 10^{-6} inch per second. The criteria are given in terms of velocity because the sensitivity of humans, buildings and equipment to vibration typically has been found to correspond to a constant of vibration velocity amplitude within the frequency range of most concern for environmental vibration (roughly 5 to 100 Hz). Although the peak particle velocity (PPV) commonly is used to quantify vibration amplitude for blast damage criteria, response to train vibration is better related to the RMS amplitude, defined as the average of the squared amplitude of the signal over a one-second time period. Although velocity normally is described in units of inches per second in the USA, the decibel notation, which acts to compress the range of numbers required to describe vibration, also is commonly used.

The effects of ground-borne vibration include feelable movement of the building floors, rattling of windows, items on shelves or walls, and "rumbling" sounds. In extreme cases, vibration can cause damage to buildings. Damage is not normally a factor for transportation projects, however, with the occasional exception of impact-type pile driving or blasting during construction. Annoyance with vibration often occurs when the level exceeds the threshold of perception by about 10 dB. This is an order of magnitude below the damage threshold for normal buildings.

The annoyance criteria for ground-borne vibration impact are based on those currently being proposed by the FTA, and also are consistent with those used for the vibration impact assessment of the MBTA's Old Colony Commuter Railroad Rehabilitation project. These criteria, presented in Table 4.3-1, are based on the maximum RMS ground vibration levels for a single event and account for land use as well as the frequency of events. Because the project involves the introduction of commuter rail service to a rail line already in use, the vibration impact from trains was evaluated as follows: (1) MBTA commuter rail operations were assessed on an absolute scale defining a threshold which, if exceeded, would result in vibration impact, and (2) The increased speeds associated with the project which affect existing Amtrak and Conrail freight operations were assessed on a relative scale, by which an increase of 2 V_{dB} or more in addition to exceedance of an absolute threshold would result in vibration impact.

Table 4.3-1 Criteria for Train Vibration Impact

LAND USE CATEGORY	GROUND VIBRATION IMPACT LIMITS (RMS Vibration Velocity Level in dB re 1 μin./sec)	
	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 V_{dB}	65 V_{dB}
Category 2: Residences and buildings where people normally sleep.	72 V_{dB}	80 V_{dB}
Category 3: Institutional land uses with primarily daytime use.	75 V_{dB}	83 V_{dB}

1 "Frequent Events" is defined as more than 70 vibration events per day. Most transit systems fall into this category.
2 "Infrequent Events" is defined as less than 70 vibration events per day. This category includes most commuter and inter-city rail systems.

Another area of concern is damage to buildings located near the right-of-way. The significance criteria for vibration damage are 100 V_{dB} for buildings in general, and 95 V_{dB} for fragile, historic buildings. However, damage is extremely unlikely except in unusual cases or when the track will be very close to the structure. In this study, no potential for building damage from train-induced vibration was identified.

Assessment of Train Vibration

Steel-wheeled trains operating on steel rails create vibration energy that propagates through the intervening soil and rock layers to nearby buildings. Once the vibration waves propagate through a building, the vibration may be perceived by occupants as motion of building surfaces, rattling of items on shelves or hanging on walls, or as a low-

frequency rumbling noise. The rumble is caused by the vibrating walls, floors, and ceiling radiating acoustic waves. In a sense, the room surfaces act like giant loud speakers.

One of the major problems with developing accurate estimates of ground-borne vibration is the large number of factors that can influence the levels at a given receiver position. The physical parameters of the transit facility, the area geology and the receiving building all can have an influence on the vibration levels. Unlike airborne noise, characteristics of both the path and receiver of ground-borne vibration are highly variable and difficult to predict. The important physical parameters can be divided into the following four categories:

Operational Factors: This category includes all of the parameters that relate to the track system and vehicle. Factors such as high train speeds, stiff primary suspensions on the vehicle, stiff track support systems, jointed rail, flat or worn wheels, or corrugated rail will increase the possibility of vibration-related problems.

Guideway: The type of guideway, the rail support system, and the mass and stiffness of the guideway structure will all have an influence on the level of ground-borne vibration. A rail system guideway will be either subway, at-grade, or elevated. It is rare for ground vibration to be a problem with elevated railways except for buildings located within 50 ft of guideway supports; directly radiated noise is usually the predominant effect from at-grade guideway although vibration can be a problem; and ground-borne vibration is often one of the most important environmental effects of subways.

Geology: Soil conditions have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Experience with ground-borne vibration is that vibration propagation is more efficient in stiff clay soils, and shallow rock seems to concentrate the vibration energy close to the surface and can result in ground-borne vibration at large distances from the track. Factors such as layering of the soil and depth to water table also have significant effects on the propagation of ground-borne vibration.

Receiving Building: The receiving building is a key component in the evaluation of ground-borne vibration since ground-borne vibration effects occur almost exclusively inside buildings. The vibration levels inside a building are dependent on the vibration energy that reaches the building foundation, the coupling of the building foundation to the soil, and the propagation of the vibration through the building. A general guideline is that the heavier a building is, the lower the response will be to the incident vibration energy.

Because ground-borne vibration is a complex phenomenon that is difficult to model and predict accurately, most prediction procedures rely on empirical data. The empirical

method used to develop a model of vibration generated by trains operating on the project corridor is based on available data from measurements and provides a relatively conservative, reasonable basis for projecting train vibration along the corridor for existing and future scenarios. The data used to develop the model used in the DEIR were supplemented to provide more accurate and site-specific estimates of the maximum vibration levels from train operations at sensitive receivers along the project right-of-way. In May 1995, measurements of actual MBTA Interim Service trains, as well as of Amtrak and Conrail train pass-bys, were performed at the following locations:

- **Site 1 - Ashland**: Ground vibration from three Interim Service MBTA commuter trains, as well as two Amtrak trains, were measured at a site on the south side of the right-of-way along Homer Avenue.

- **Site 2 - Westborough**: Three Interim Service MBTA trains were measured, in addition to one Conrail and one Amtrak train, at the Westborough Station site on Smith Parkway. The measurements were conducted on the north side of the track. Measurements of Conrail and Amtrak trains were also taken here in 1993 to characterize the existing vibration environment prior to MBTA operations.

- **Site 3 - Grafton**: Measurements of ground vibration from three Interim Service commuter trains and one Amtrak train were conducted at a site off Westborough Road, adjacent to the residential building at 131 Westborough Road. Measurement positions were on the south side of the track.

- **Site 4 - Grafton**: Vibration measurements in Grafton were repeated at a second location near the corner of Elm Street and Prentice Street. Three Interim Service MBTA trains were measured at this site, with measurements on the south side of the track.

Because vibration propagation, or the rate at which ground-borne vibration decays as a function of distance, is dependent on area geology and other site-specific factors, simultaneous vibration measurements were made at two positions on the ground at different distances from the track for each train passage. This type of measurement serves to characterize both the vibration source as well as the propagation path.

Each train event was documented for train consist and speed and was used, together with vibration measurements of MBTA commuter trains conducted in April 1993 prior to inception of Interim Service, to develop estimates for the vibration levels at specific areas along the right-of-way identified in the DEIR as potentially experiencing vibration impact from Basic and Expanded MBTA service. The towns of Ashland, Westborough and Grafton were targeted since the majority of the vibration impacts anticipated in the DEIR were in these three areas.

Since no vibration impact was identified in the DEIR as a result of increased speeds for Amtrak and Conrail trains, vibration levels reported here represent only those of MBTA commuter trains operating on the Framingham/Worcester line. Figure 4.3-1 presents a graphical summary of measured train vibration levels in the corridor as a function of distance from track, normalized to a train speed of 60 mph, and sorted by measurement location. April 1993 measurement data from Natick also are included on this graph, since the vibration projections made in the DEIR using the prediction curve shown were based solely on regression of these Natick data. It can be seen from this figure that with the exception of the two measurement sites in Grafton, all recent measurements in the project corridor of Interim Service MBTA trains indicate that actual vibration levels are within ±3 dB of the curve used to make the DEIR projections. Thus, it is reasonable to assume that the projected vibration impacts reported in the DEIR are accurate within a reasonable margin for all locations, except those near the measurement sites in Grafton where the model over-predicts vibration effects.

For the measurements taken in Grafton, the results in Figure 4.3-1 indicate consistently lower levels of ground vibration at both sites, with the site off Westborough Road (Site 4) showing levels lower by about 5 to 10 dB than those obtained farther west on Elm Street (Site 3). Reasons for such a large discrepancy in vibration levels produced by the same source (i.e. commuter trains) are unclear, although likely explanations include significant differences in soil type and/or track condition. Soil composition data from borings taken near the measurement locations failed to reveal any conclusive evidence, although the Grafton borings appear to be composed mostly of dry, loose sand, which has been shown to have higher internal energy dissipation due to more relative movement or friction within the soil.

The estimated vibration levels in the Grafton area were adjusted by a conservative -5 dB relative to the remainder of the corridor, given that most of the impacts identified in the DEIR are clustered in the vicinity of Elm Street. The corridor-wide inventory of train vibration impact was revised to reflect this adjustment, and is given in Table 4.3-2. This table indicates, by corridor milepost segment, the width of each impact zone in terms of distance from the track and provides an estimate of the number of residential units located within the vibration impact zone for each community under the proposed Basic Service commuter rail scenario. The number of residential buildings located within the impact zones were counted using 1″=200′ scale maps of the project corridor, and the number of units per building was estimated in the case of multi-family dwellings.

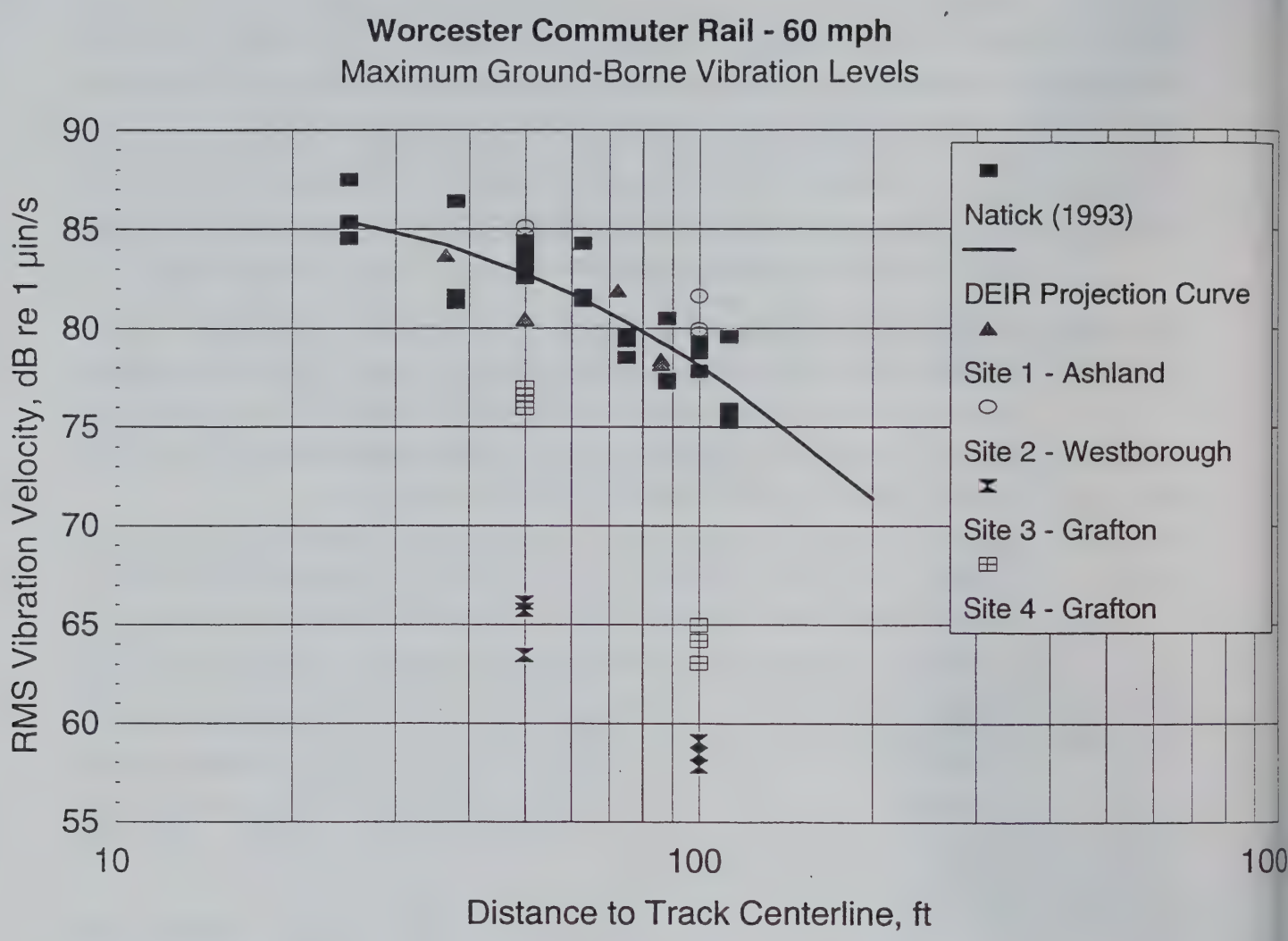


Figure 4.3-1 Measured MBTA Vibration Levels

The vibration impact zones were determined by (1) correcting the vibration propagation curve for speed variations along individual segments of the corridor, (2) comparing the vibration projections with the project criteria, and (3) extrapolating along the curve to determine the distances within which impact would occur. The criterion used for vibration impact generated by MBTA commuter train service was selected based on the total number of existing train operations per day. In all cases, a criterion of 80 V_{dB} was found to apply, since the total number of trains per day will not exceed 70, and all sensitive land uses were found to be residential.

As reported in the DEIR, all of the impacts identified in Table 4.3-2 are as a result of absolute impact incurred by MBTA commuter trains. In no areas do the anticipated speed increases for Amtrak or Conrail operations cause relative vibration impact as defined by the criteria. All of the significant vibration impacts reflect annoyance or activity interference effects associated with indoor vibration and not building or structural damage. *In no cases do the projected train vibration levels along the corridor exceed or even approach the vibration damage criteria.*

Most of the vibration impacts occur close to the right-of-way. Over the entire corridor, no vibration impact will occur beyond about 100 ft from the nearest track centerline. The largest number of impacts are in Ashland, where the right-of-way passes through some residential areas with residences as close as 50 ft. In general, the vibration impacts occur in areas where commuter trains will be traveling at or close to their maximum speed of 70 mph.

Table 4.3-2 Corridor-wide Train Vibration Impact Inventory for Commuter Rail Service

Segment Description	City/Town	Milepost		Distance to Vibration Impact (ft)	# Residences in Impact Zone
		From	To		
Fountain Street	Framingham	21.5	21.9	25	0
Winter Street	Framingham	21.9	22.4	45	0
Ashland Line	Framingham	22.4	22.8	60	3
TOTAL	**Framingham**	**21.5**	**22.8**	**–**	**3**
Fountain Street	Ashland	22.8	23.7	70	0
Sudbury River	Ashland	23.7	23.8	80	0
Main/Cherry GXs	Ashland	23.8	24.7	45	8
Ashland Station	Ashland	24.7	25.3	25	0
	Ashland	25.3	25.7	45	0
High Street	Ashland	25.7	25.9	80	0
	Ashland	25.9	26.0	80	0
	Ashland	26.0	26.3	80	0
Southborough Line	Ashland	26.3	26.4	70	0
TOTAL	**Ashland**	**22.8**	**26.4**	**–**	**8**
	Southborough	26.4	26.9	55	0
River Street/Rt. 85	Southborough	26.9	27.3	25	0
Southborough Sta.	Southborough	27.3	27.4	25	0
	Southborough	27.4	27.5	25	0
Bridge Street	Southborough	27.4	28.0	55	0
Westborough Line	Southborough	28.0	28.5	60	1
TOTAL	**Southborough**	**26.4**	**28.5**	**–**	**1**
Fruit Street	Westborough	28.5	28.9	60	0
I-495	Westborough	28.9	29.5	70	0
Conrail Yard	Westborough	29.5	30.1	95	0
Route 30	Westborough	30.1	32.0	95	0
Milk Street/Rt. 135	Westborough	32.0	32.7	95	3
	Westborough	32.7	33.0	95	0
Maynard Street	Westborough	33.0	33.2	95	1
Otis Street	Westborough	33.2	33.6	25	0
Westborough Sta	Westborough	33.6	33.9	25	0
Arch Street	Westborough	33.9	34.7	55	0
	Westborough	34.7	35.2	60	0
Grafton Line	Westborough	35.2	35.8	70	0
TOTAL	**Westborough**	**28.5**	**35.8**	**–**	**4**

Table 4.3-2 Corridor-wide Train Vibration Impact Inventory for Commuter Rail Service

Segment Description	City/Town	Milepost		Distance to Vibration Impact (ft)	# Residences in Impact Zone
		From	To		
Tufts University	Grafton	35.8	36.2	75	0
Pine Street	Grafton	36.2	36.4	45	0
Grafton Station	Grafton	36.4	36.5	25	0
	Grafton	36.5	36.9	25	0
Grafton GX	Grafton	36.9	37.2	25	0
	Grafton	37.2	37.5	30	0
Route 140	Grafton	37.5	38.0	40	0
Millbury Line	Grafton	38.0	39.0	40	0
TOTAL	**Grafton**	**35.8**	**39.0**	**–**	**0**
	Millbury	39.0	39.4	80	0
	Millbury	39.4	39.5	60	0
Millbury Station	Millbury	39.5	39.6	25	0
TOTAL	**Millbury**	**39.0**	**39.6**	**–**	**0**
Route 20	Worcester	39.6	39.9	25	0
Sunderland Road	Worcester	39.9	40.2	35	0
Lake Park/Coburn	Worcester	40.2	41.5	60	1
Hamilton Street	Worcester	41.5	41.7	45	0
	Worcester	41.7	42.3	45	0
Eastview Road	Worcester	42.3	42.4	45	0
(Eastview Apts)	Worcester	42.4	42.6	45	0
Plantation Street	Worcester	42.6	42.8	45	0
Draper Street	Worcester	42.8	43.2	45	2
Putnam Street	Worcester	43.2	43.9	45	0
	Worcester	43.9	44.1	–	0
	Worcester	44.1	44.2	–	0
Worcester Station	Worcester	44.2	44.3	–	0
TOTAL	**Worcester**	**39.6**	**44.3**	**–**	**3**
CORRIDOR TOTAL					**19**

Train Vibration Mitigation

The train vibration evaluation projects a total of 19 residential vibration impacts for the proposed Basic Service commuter rail operations. The analysis also indicates that the primary areas of impact are expected to be where train speeds approach their upper limits. The vibration impact analysis was conducted assuming baseline conditions of

continuously welded rail (CWR) in good condition on wood tie-and-ballast track. Source, path and receiver vibration impact mitigation measures have been considered as described below.

Source Vibration Control

Train vibration control at the source can involve equipment and track-related measures as well as operational modifications. Since the source of ground-borne vibration is the wheel/rail interaction, equipment and track-related measures are essentially limited to ensuring good maintenance practices such as rail grinding and wheel "trueing" on a regular basis. Although maintenance alone cannot be relied upon to provide the required vibration mitigation, the construction of new track between Westborough and Worcester, as well as the overhaul of the existing trackbed undoubtedly will result in improved track condition from the present state. This, together with continued maintenance of both track and rolling stock, will result in lower vibration levels than those reported in this document.

While another vibration mitigation measure at the source would be a reduction in train speed, such operational modifications are not feasible to meet the objectives of the project.

Path Vibration Control

Potential path vibration control treatments include (1) ballast mats, (2) floating slabs, and (3) trenches or underground barriers. These measures are discussed below.

- **Ballast Mats**. Ballast mats typically consist of a 2 to 3 inch-thick elastomer mat placed under the normal track ballast on a rigid, well-packed subgrade. Most ballast mat installations are supported on concrete foundations in subway tunnels or on concrete railroad bridges. Although there are some examples of ballast mats being installed for at-grade track, there are limited data on the effectiveness of at-grade installation. In addition, ballast mats are effective at reducing vibration only at frequencies of about 40 Hz and above. Recent measurements of MBTA commuter train vibration indicate that the typical ground vibration spectrum at locations calling for vibration mitigation contains a significant amount of energy below 40 Hz, which is much more difficult to control. In Figure 4.3-2, average vibration spectra normalized to a distance of 50 ft from the track and a train speed of 60 mph are shown for the four vibration measurement sites in the project corridor.

  As seen in Figure 4.3-2, the vibration spectra measured at Sites 3 and 4 in Grafton have a noticeable absence of energy at low frequencies below about 31.5 Hz. This is the primary source of the dramatically lower overall levels measured at these sites.

However, the spectra measured at Site 1 (Ashland) and Site 2 (Westborough) show significant differences in frequency content and magnitude. The Site 1 spectrum contains most of its energy centered at about 20 Hz, with a rapid falling-off of energy beyond 40 Hz. Site 2 also exhibits this low-frequency content down to 8 Hz, but also contains energy up to 63 Hz, resulting in slightly higher overall levels. At Sites 1 and 2, which are assumed to be typical of most of the project corridor, ballast mats would be largely ineffective and therefore are considered infeasible.

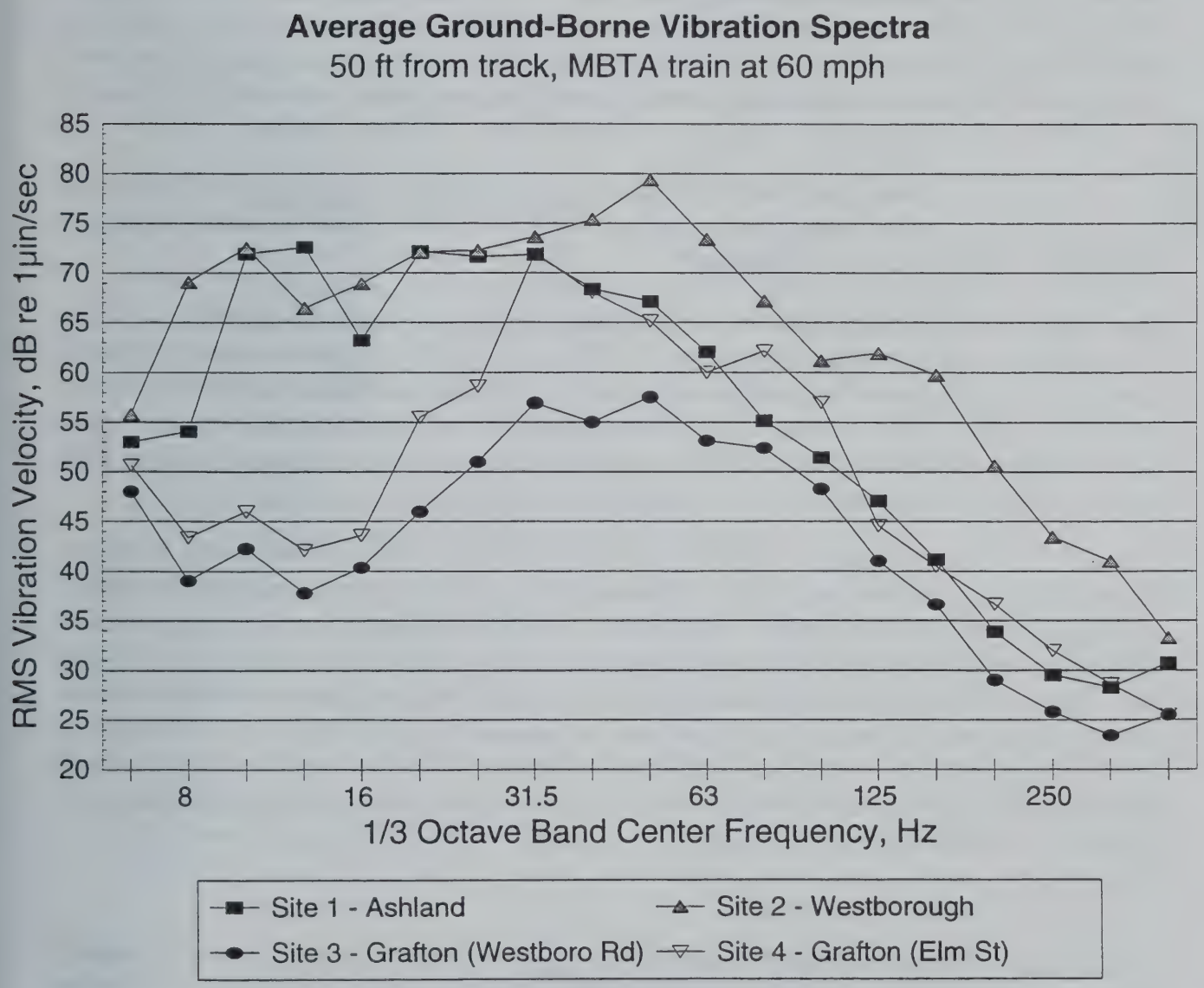


Figure 4.3-2 Ground Vibration Spectra from Commuter Train Pass-bys

Another disadvantage of ballast mats is that they tend to be expensive, particularly for retrofit installations to existing track. Based on measurement data from existing installations, the estimated overall vibration reduction from commuter train pass-bys for most of the Framingham-Worcester project corridor would only be 2 to 4 dB. Given the high cost and small benefit achieved, ballast mats would not be considered cost-effective.

- **Floating Slabs**. Floating slabs consist of 1-ft thick or thicker concrete slabs supported by resilient pads on a concrete foundation. The tracks are mounted on top of the floating slabs. Most successful floating slab installations are in subways. To use them with at-grade track, a concrete foundation must first be constructed for the slab to work against.

  Construction of a floating slab track bed is significantly more expensive than tie and ballast at-grade track construction. Therefore, floating slabs are unlikely to be cost effective for this project.

- **Trenches or Underground Barriers**. Although rarely used, a deep trench, 30 to 80 ft deep, along one or both sides of the tracks can be an effective barrier to ground-borne vibration. The trench can be either open or filled with a material such as closed-cell foam or concrete. However, this is not likely to be a viable option for this project corridor. A deep trench test performed in Toronto, Canada produced only marginal results in terms of vibration attenuation.

Floating slabs and trenches are discussed here only to offer an idea of what alternative options are available for vibration control and should not be considered practical, "everyday" solutions. Floating slabs for at-grade track rarely have been implemented in this country; although two examples exist in the San Francisco area. One is on the Muni light rail line in downtown San Francisco, in which a short portion of embedded track was built using a floating slab and subsequent tests showed substantial attenuation of vibrations. Another application is for a new BART line under construction, in an area found to have particularly efficient ground vibration propagation conditions, and an at-grade floating slab was judged to be the only method of effective mitigation.

Receiver Vibration Control

Practical vibration mitigation measures at the receiver are generally limited to property acquisition or the purchase of vibration easements. In cases where the cost of reducing ground-borne vibration levels to acceptable limits exceeds the value of the affected property, such measures may provide the most cost-effective means for train vibration impact mitigation.

Of the above measures, equipment maintenance and ballast mats are probably the most proven and practical means of providing mitigation from vibration impact. However, it is highly unlikely that ballast mats will be effective in controlling the low-frequency dominated vibration generated by the MBTA commuter rail trains. The amount of vibration reduction would be limited to a few decibels at most, making it an impractical and not cost-effective option.

The only practical option for minimizing vibration impact to the community, therefore, is through a regular maintenance program of the wheels and trackbed. This will entail regular inspection and continued upkeep of the wheels and trackbed in good condition. However, even with such practices some residual vibration impact due to this project may be unavoidable once operations are underway.

Construction Impacts/Mitigation

All potential impact from project right-of-way construction is expected to be site-specific and temporary, with no construction activity planned for longer than a 12 month duration. Only those in the immediate vicinity of a bridge or section of track under repair or modification will experience the noise impact. Such impacts will be localized and will vary during the course of the construction as different facilities are improved at different locations. The actual duration of activity at a specific location will be relatively short (two to four weeks along track sections to be realigned) except where major construction, e.g. bridges, will be required. In such cases, construction-related noise and vibration may be experienced for period of several months to a year.

Despite the transient nature of construction, the impact from these activities may be significant due to the high noise and vibration levels generated by individual pieces of construction equipment. In addition, nighttime construction work, if required to minimize disruption of current train operations, would add further to the noise impact. Since background ambient noise levels are lower during these hours, a noise level of a given intensity would be perceived as louder during the nighttime than during the daytime hours. Certain trackwork operations, such as undercutting, and various phases of major construction efforts may occur during the evening and nighttime hours. The greatest potential for vibration impact is during intense construction activities, such as blasting and pile driving.

Noise impact criteria for construction are based on the outdoor AAL_{dn} ,or Annual Average Day-Night Equivalent Sound Level, with a threshold of 65 dBA AA L_{dn} defining the noise impact zone. The L_{dn} is a 24-hour, energy-average noise level with a 10 dB penalty applied to noise occurring at night (10 pm to 7 am). The L_{dn} is considered appropriate because some nighttime construction activity is anticipated and because it is the noise

metric adopted for the assessment of project train noise impact. For construction noise, the daily phase L_{dn}s are averaged over a one-year period based on durations and schedules to determine the AA L_{dn} at nearby noise-sensitive receivers.

Vibration impact criteria for construction are consistent with criteria used for assessing impact from train operations. These are described at the beginning of this section.

Right-of-Way Construction

Project right-of-way construction would consist of construction of additional mainline track from MP 33.2 to 40.3, reconstruction of the existing southerly mainline track from MP 40.3 to 44.4, construction of new siding, MP 44.8 to MP 46.2, and reconstruction of the railroad bridge over Route 85 in Southborough.

Primary activities include tie renewal, ballast cleaning and undercutting, installation of continuously welded rail, and rail surfacing and grinding. Each of these operations involves one or more pieces of specialized rail maintenance equipment which moves relatively continuously along the track. Since the majority of the work requires machinery to operate directly on the trackbed, some of this construction may occur at night to avoid disruption of daily operations. The duration of nighttime construction would be dictated mainly by Conrail, since most nighttime train operations are Conrail freight trains.

Estimates of noise levels from track construction and undercutting also were made based on the maximum trackwork noise levels taken from the Northeast Corridor Programmatic Environmental Impact Study (PEIS). This resulted in an AA L_{dn} of 75 dBA for daytime operation and 85 dBA for nighttime operation. Assuming line source sound propagation (3 dB attenuation for each doubling of distance) for trackwork, noise impact screening distances to the criterion of 65 dBA AA L_{dn} were found to be 15 ft and 20 ft for daytime and nighttime operations, respectively. In all cases, no potential for significant impact was found to exist from trackwork construction, since these activities would be confined mostly to the center of the right-of-way.

Noise from Bridge Construction

The project will be require re-construction of the existing Route 85 bridge in Southborough (MP 27.4).

Equipment for bridge work will include cranes, trucks, jacks, material-handling equipment and other heavy-duty construction equipment. Reconstruction of the railroad bridge over Route 85 in Southborough will not require pile driving. Bridge work is expected to be carried out during normal daylight hours, with an approximate duration of nine months.

Construction noise exposure for the modifications at bridges was estimated based on noise projections for this activity that were made during the PEIS for the Northeast Corridor Improvement Project (FRA, 1978). Based on this study, the AA L_{dn} at 50 ft was taken to be 87 dBA for bridge construction.

To obtain screening distances for noise impact assessment, point-source sound attenuation was assumed for bridge work. Based on the noise levels at 50 ft, the distance to the 65 dBA AA L_{dn} impact criterion was estimated to be 200 ft for bridge.

No residences are located within this distance of the Route 85 bridge in Southborough.

Construction Noise and Vibration Mitigation

As described above, no impacts were identified for either noise or vibration resulting from construction activities for the railroad right-of-way. No site-specific mitigation plan is necessary.

Section 1.07 of the Standard Specifications used by the MBTA for construction contracts includes noise control measures as follows:

"Use every effort and every means possible to minimize noises caused by construction operations, which the Engineer may consider as objectionable. Provide working machinery and equipment designed to operate with the least possible noise, and when gearing is used, such gearing shall be of a type designed to reduce noise to a minimum. Equip compressors with silencers on intake lines. Equip gas or oil operated equipment with silencers or mufflers on intake and exhaust lines. Wherever practicable, electricity shall be used for power to reduce noise. Dumping bins, hoppers, and trucks used for disposal of excavated materials shall be lined with wood or other sound-deadening material if required. Where required by agencies having jurisdiction, certain noise-producing work may have to be performed during specified periods only."

4.4 Right-of-Way Drainage

Proposed construction of the restored second track between MP 40.3 and MP 33.2 will include minor regrading of the trackbed, regrading of ditches, installing subdrains and stormdrains, and making adjustments to three existing culvert crossings.

Table 4.4-1 lists the existing culvert crossings which have been identified along the right-of-way between MP 40.3 and MP 33.2. These culverts have been identified from a compilation of several sources including:

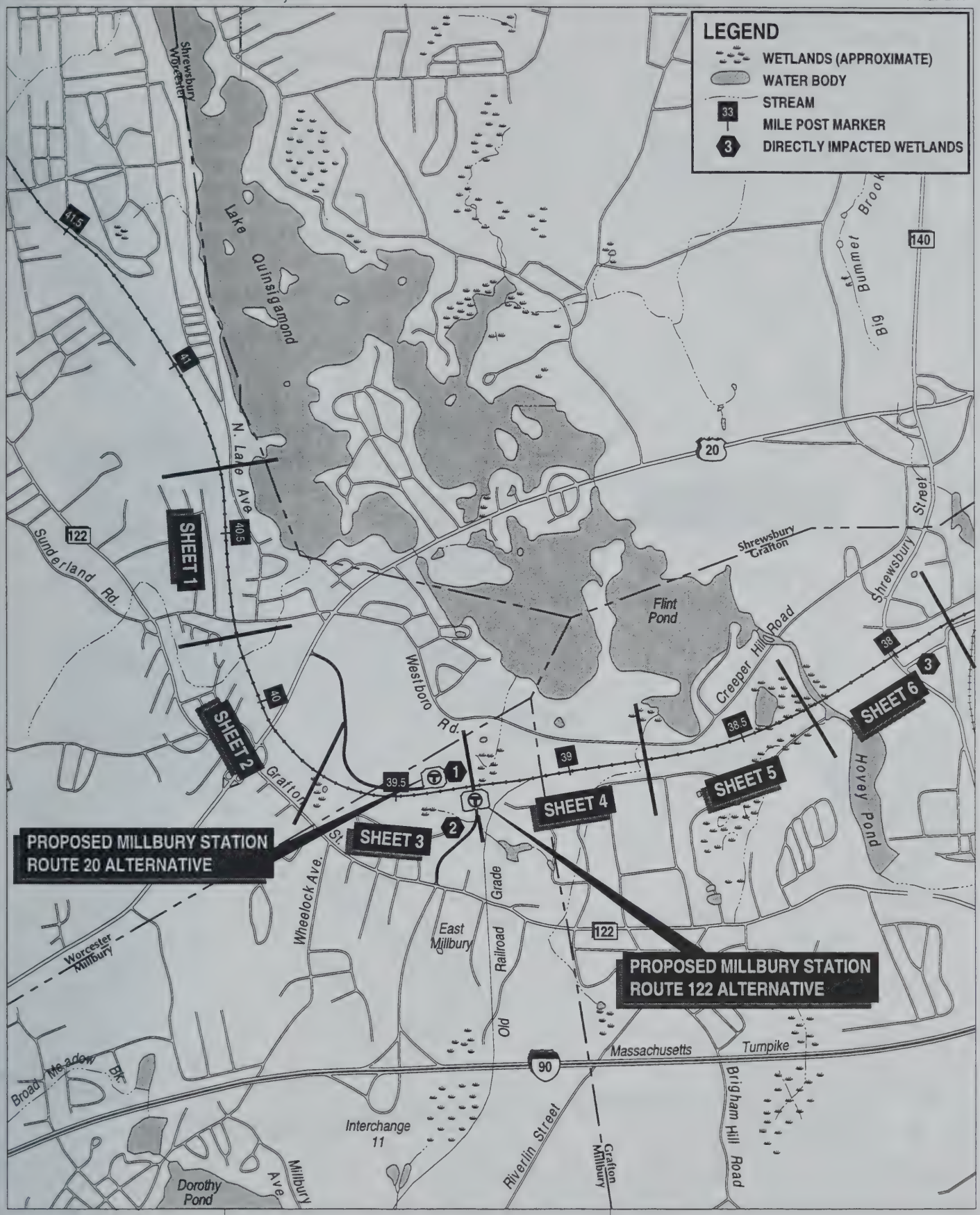
- Major water course crossings readily available on U.S.G.S. quadrangles.
- Intermittent streams and adjacent wetland resources visible from the topographic data generated by aerial mapping.
- Field inspection which confirmed the location of most culverts.

Table 4.4-1 Culvert Crossings Along Mainline

Culvert	Figure 4.4-2 Sheet #	Mile Post	Description
C-1	2	40.14	4'x4'6" Stone Box
C-2	2	39.77	2'x'2 Stone Box
C-3	4	38.80	24" Cast Iron Pipe
C-4	6	38.24	Stone Arch
C-4A	6	37.83	12" Cast Iron Pipe
C-5	7	37.61	(3) 2'7"x4'2" Stone Boxes
C-6	7	37.54	8' Wide Stone Box
C-7	8	37.27	3' x 3' Stone Box
C-8	8	37.07	16" Cast Iron Pipe
C-9	8	36.91	16" Cast Iron Pipe
C-10	10	36.35	12" Cast Iron Pipe
C-11	11	36.07	18" Cast Iron Pipe
C-12	11	35.91	1'6" x1'6" Stone Box
C-13	11	35.75	3'x4' Stone Box
C-14	12	35.58	2'x2' Stone Box
C-15	12	35.56	2'x3' Stone Box
C-16	12	35.30	2'x2' Stone Box
C-17	13	34.74	4'x5' Stone Box
C-18	14	34.39	2'6"x2' Stone Box
C-19	15	33.89	8" Cast Iron Pipe
C-20	15	33.80	12" Cast Iron Pipe

The following pages, Figure 4.4-1, panels 1 through 3, provide a key map for Figure 4.4-2, sheets 1 through 16, which depicts 1" = 200' scale mapping along the length of rail corridor where the second track is to be restored.

The general condition of the culverts within the area of proposed track restoration is good. Although some of the inlet and outlet areas are overgrown with vegetation, routine maintenance work will enhance their condition, keep the system functioning adequately, and maintain existing drainage patterns.



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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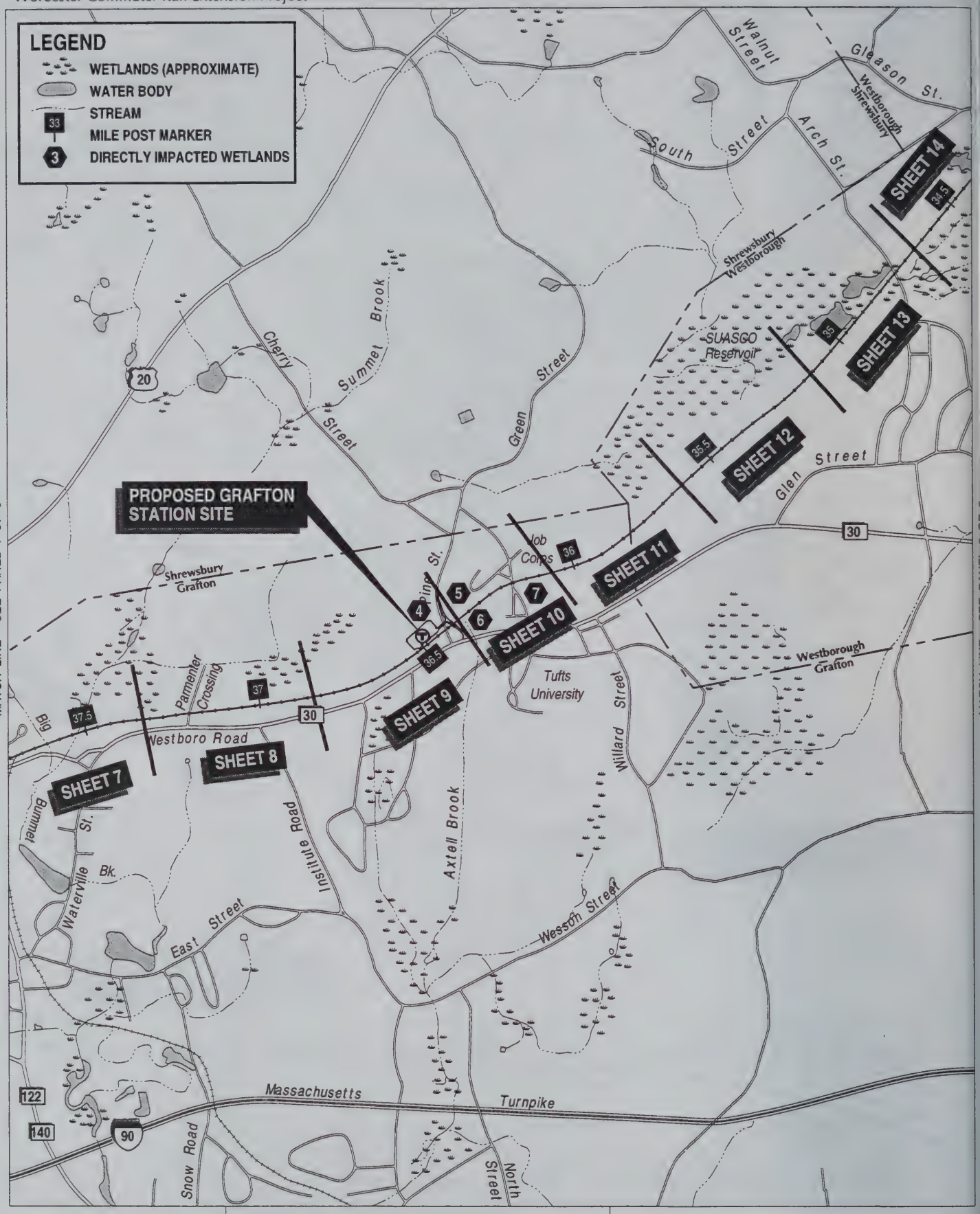
KEY MAP
Corridor Drainage and Wetlands Related to New Track Work

FIGURE 4.4-1 PANEL 1 OF 3



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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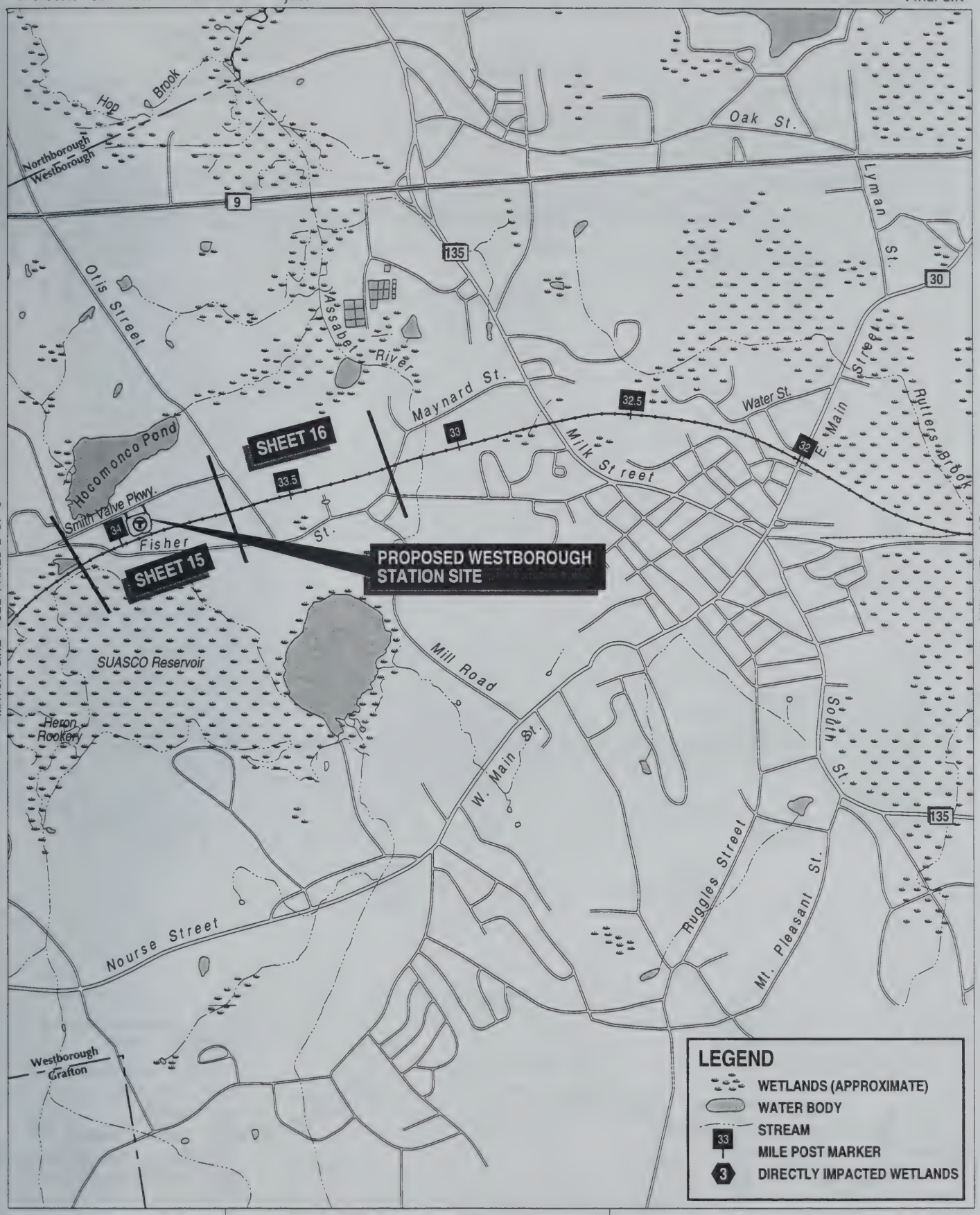
KEY MAP
Corridor Drainage and Wetlands Related to New Track Work

FIGURE 4.4-1 PANEL 2 OF 3



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 2000'

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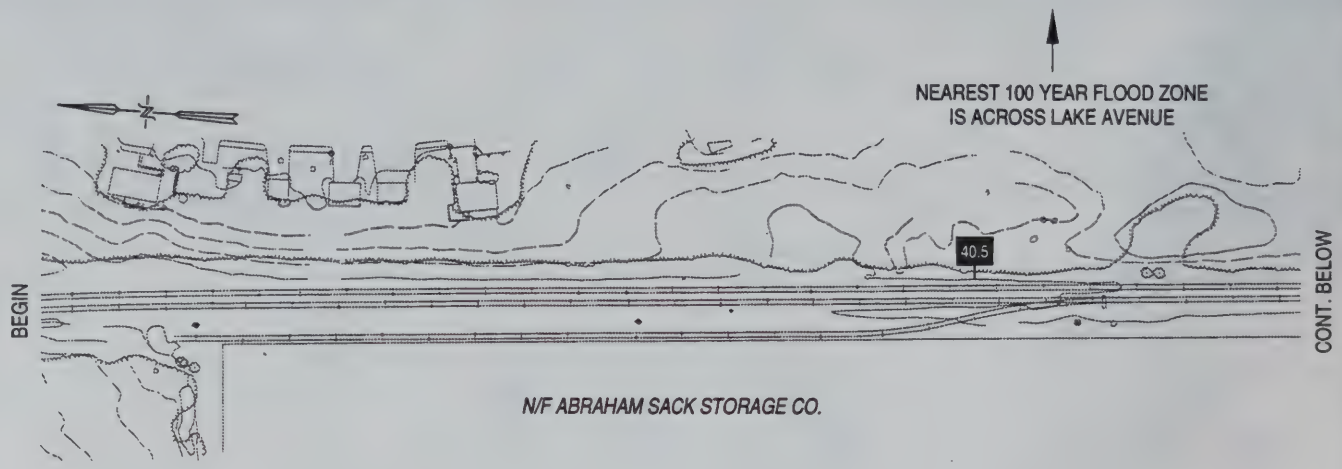
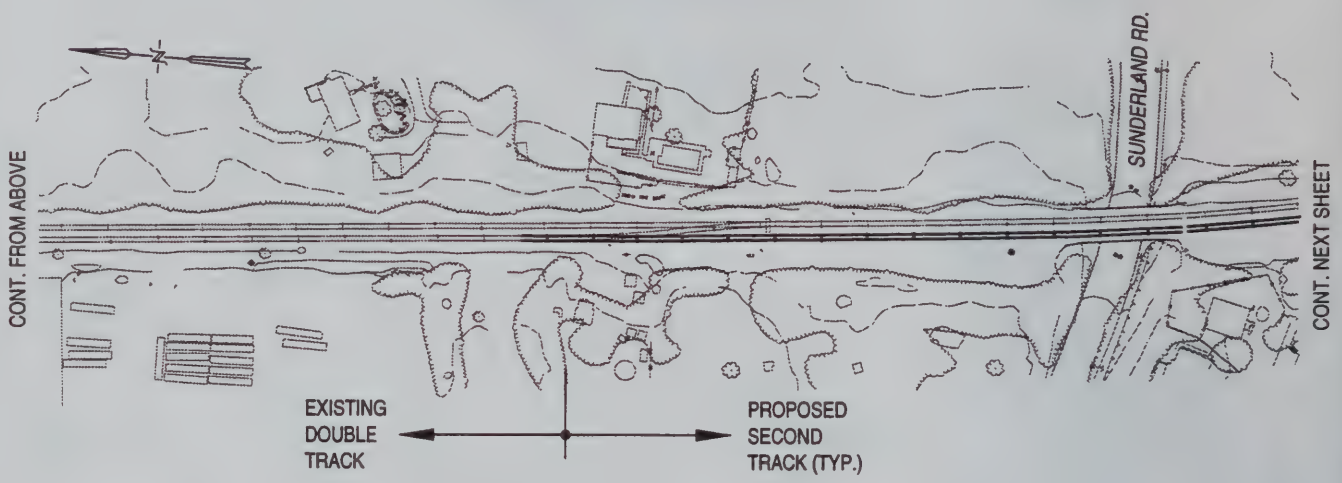
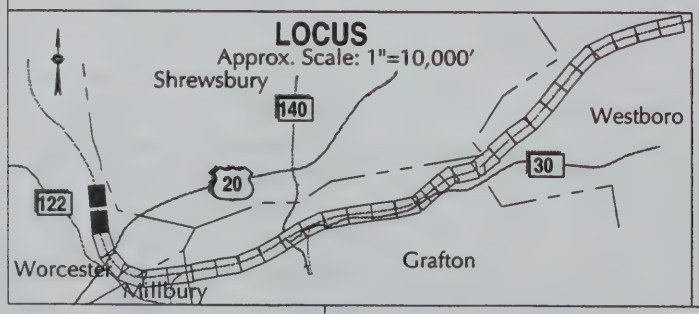
KEY MAP
Corridor Drainage and Wetlands Related to New Track Work

FIGURE 4.4-1 PANEL 3 OF 3







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

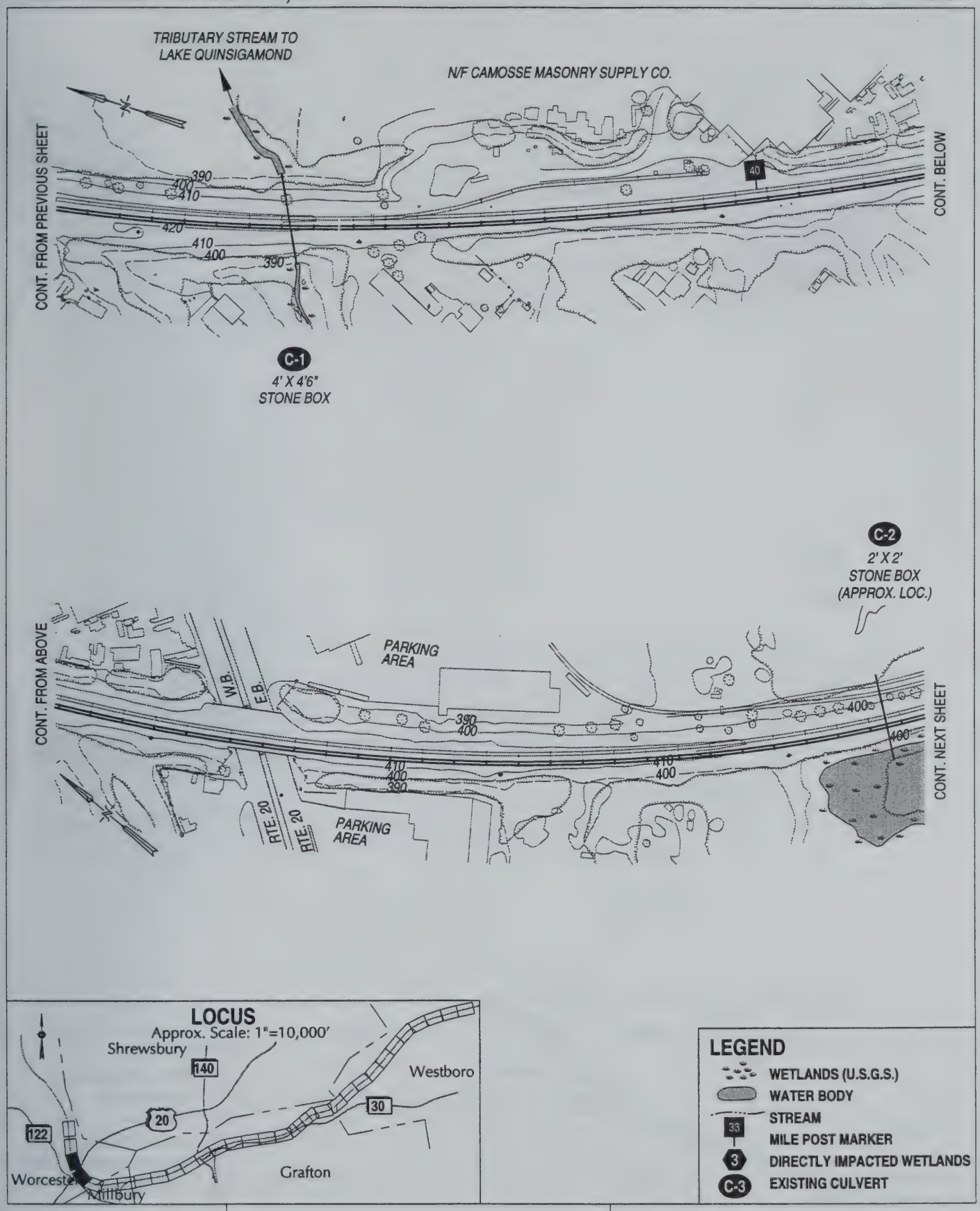
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 200'

0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 1 OF 16



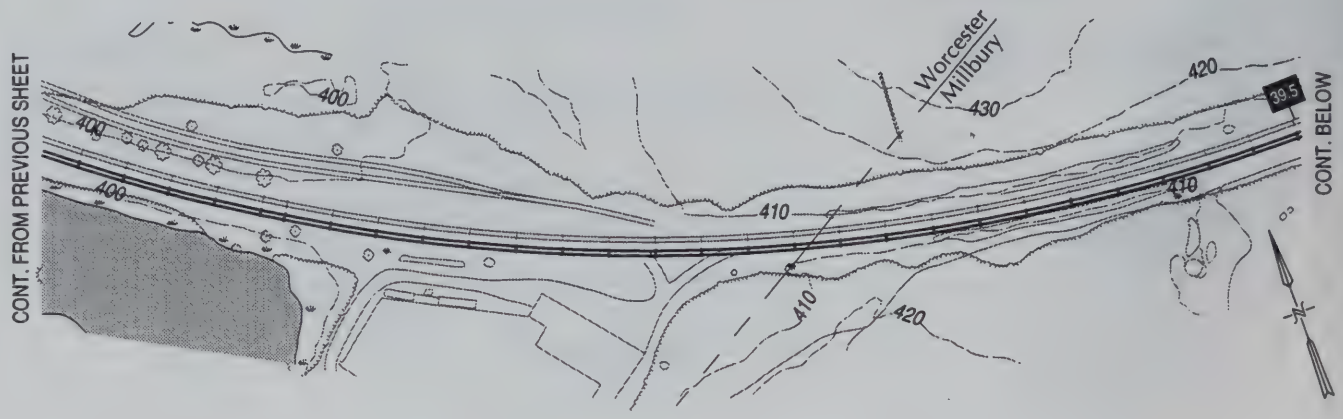
Massachusetts Bay Transportation Authority

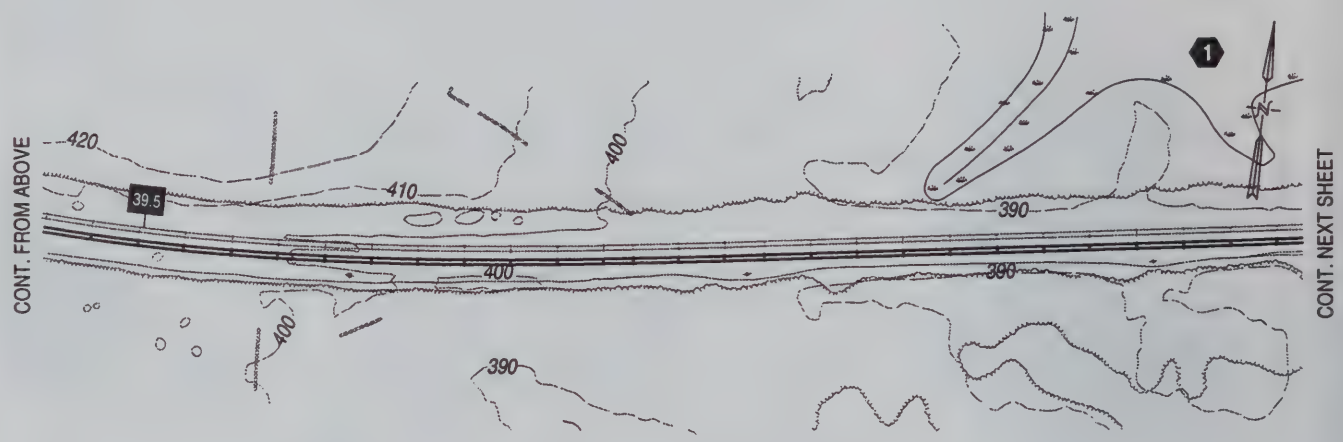
Approx. Scale: 1" = 200'

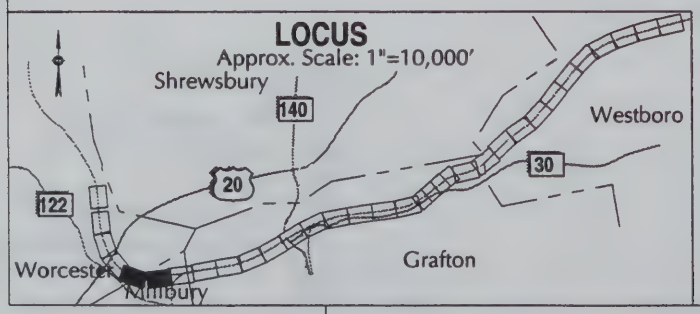
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 2 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

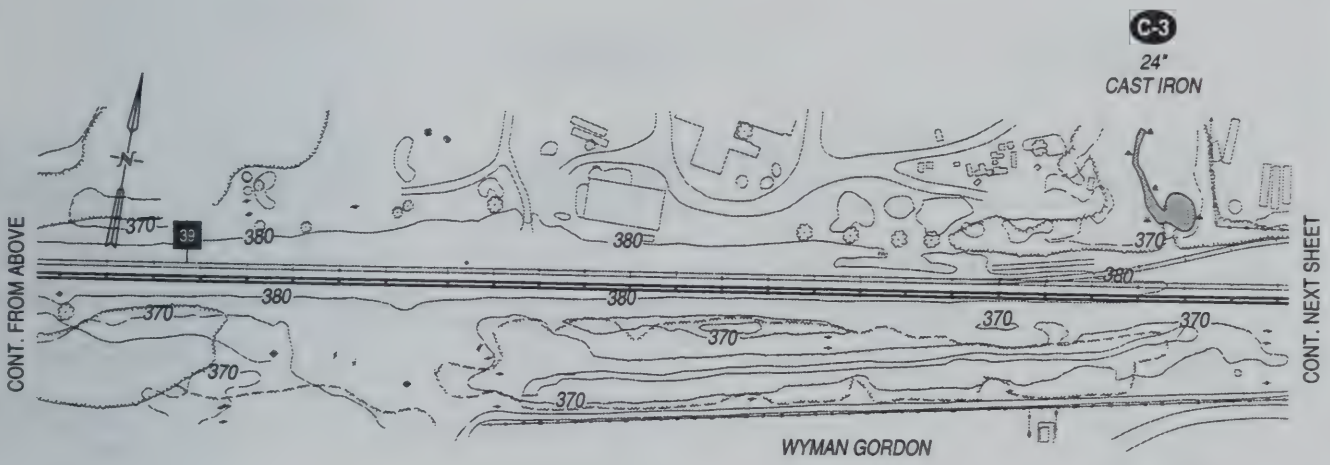
Massachusetts Bay Transportation Authority

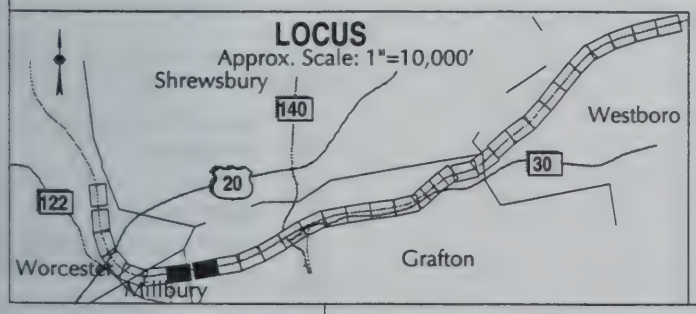
Approx. Scale: 1" = 200'

0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 3 OF 16





LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

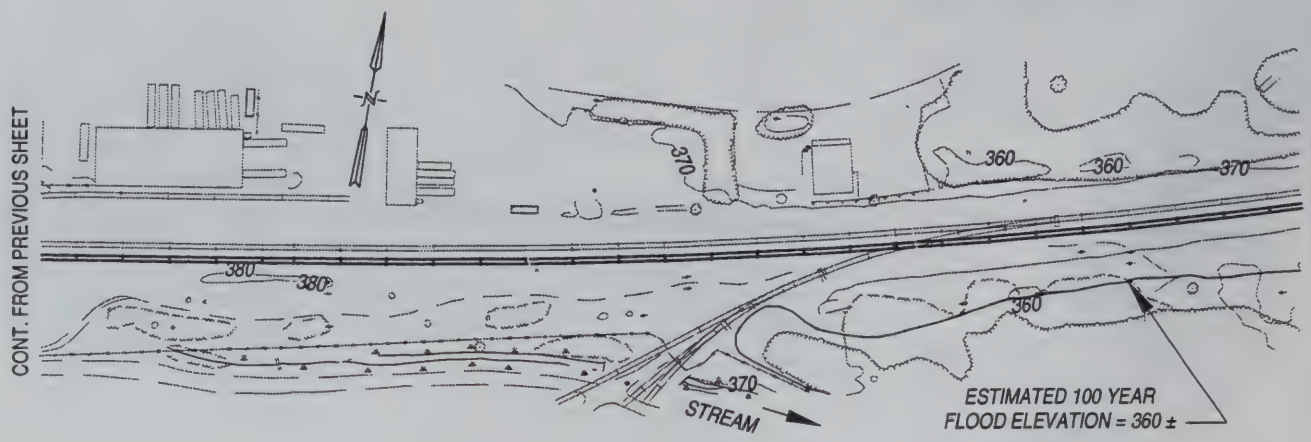
Massachusetts Bay Transportation Authority

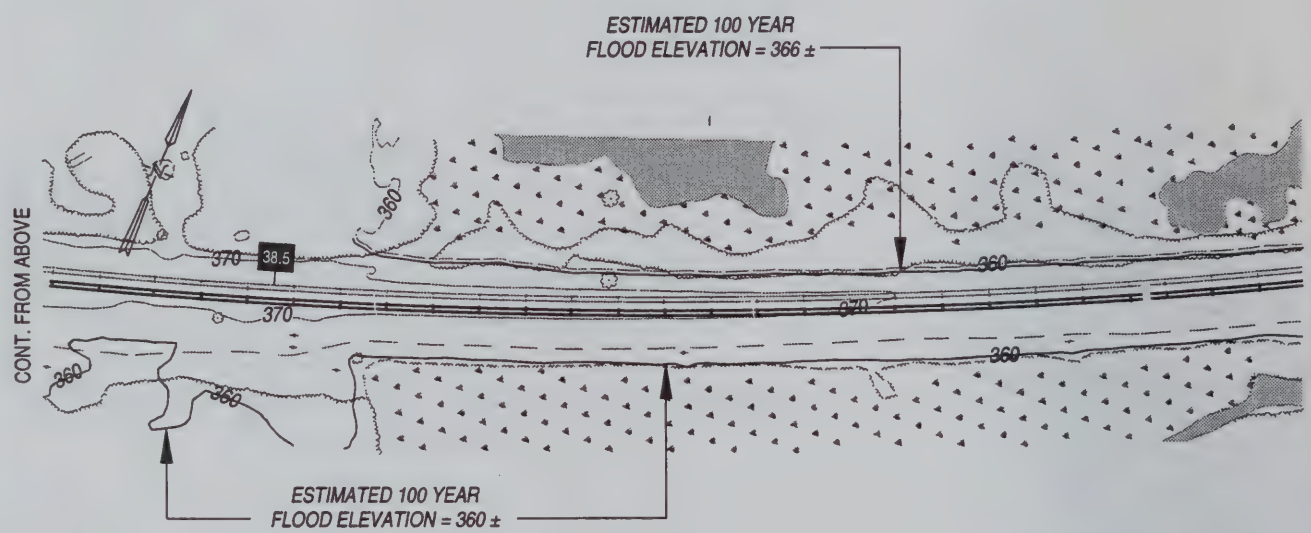
Approx. Scale: 1" = 200'

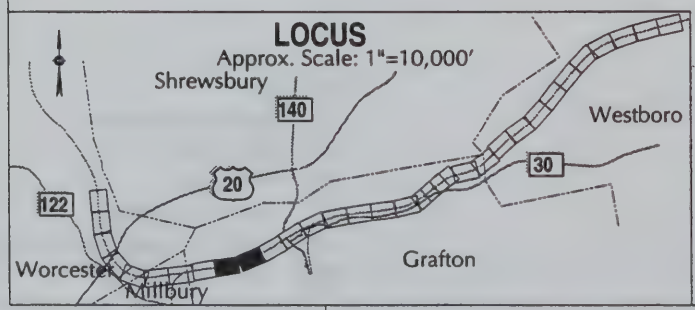
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 4 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

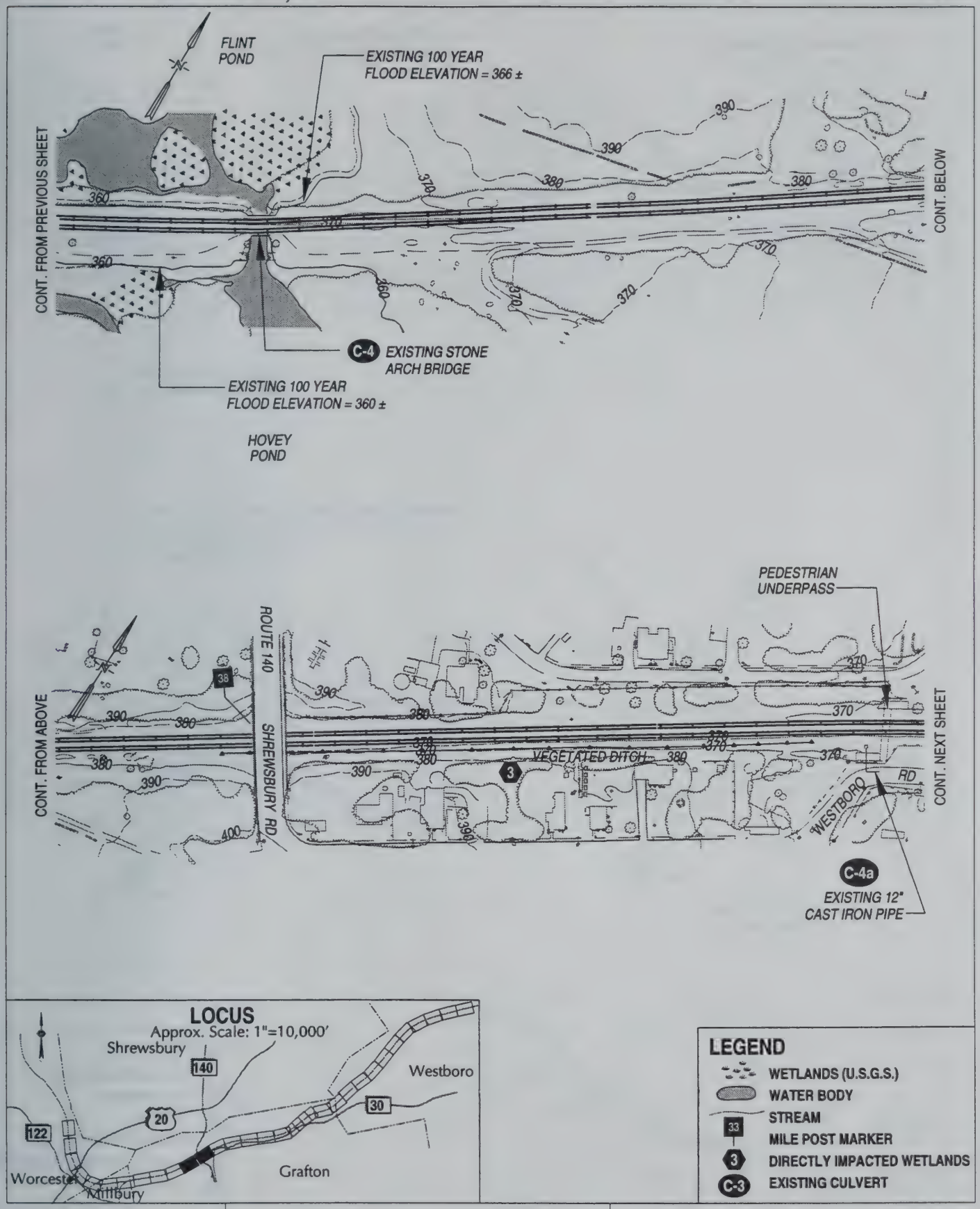
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 200'

0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 5 OF 16



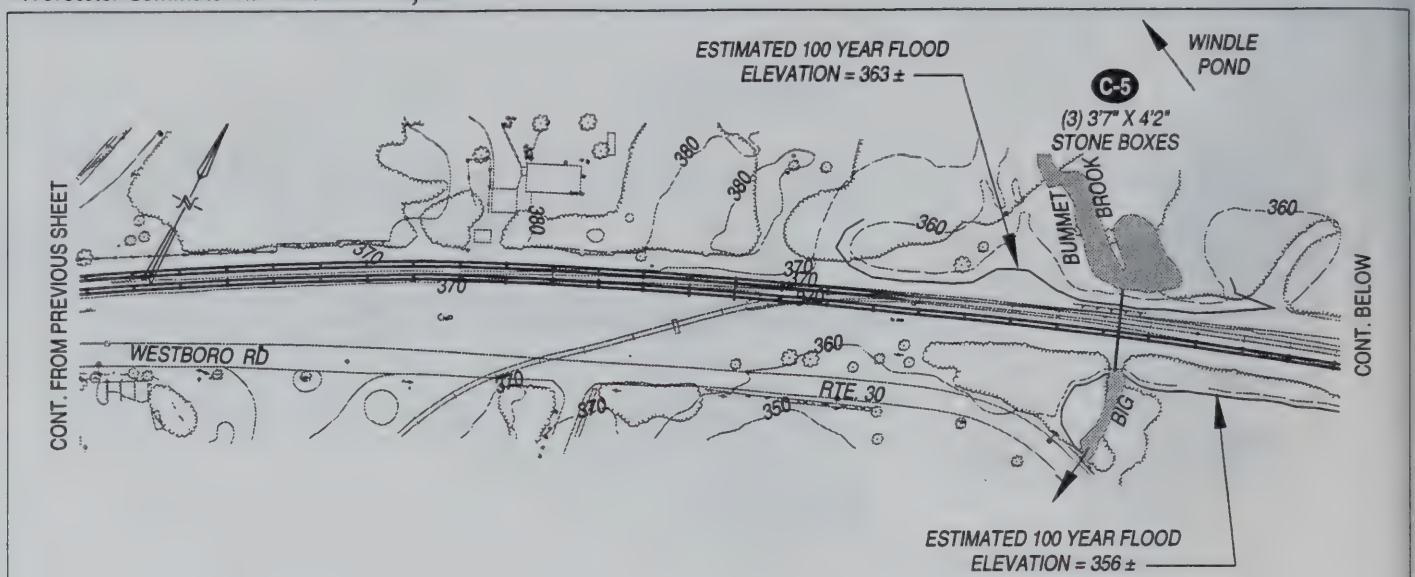
Massachusetts Bay Transportation Authority

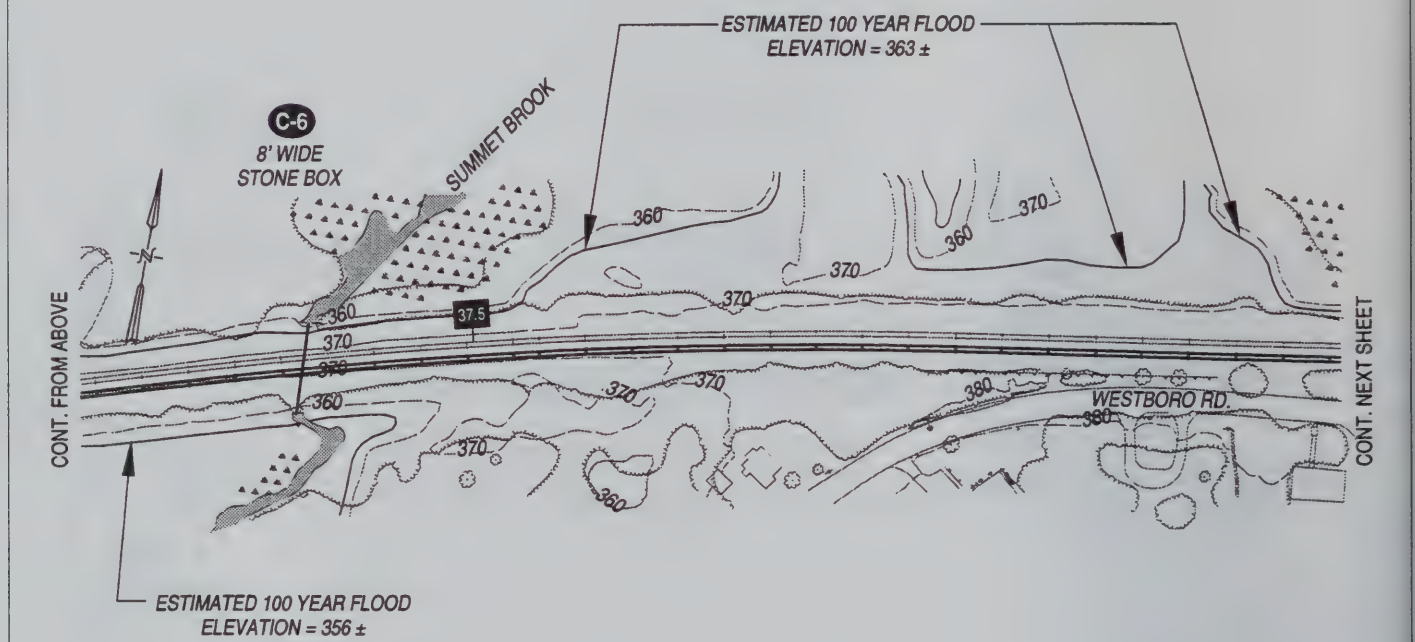
Approx. Scale: 1" = 200'

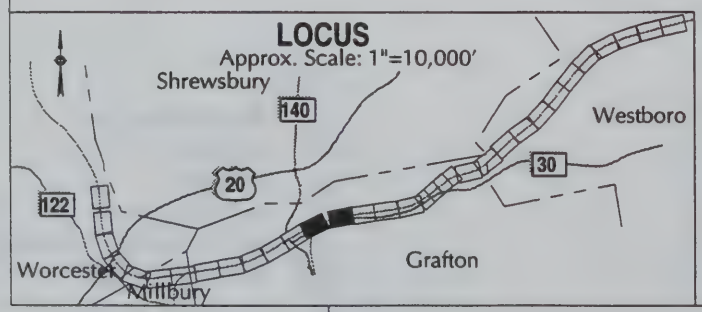
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 6 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

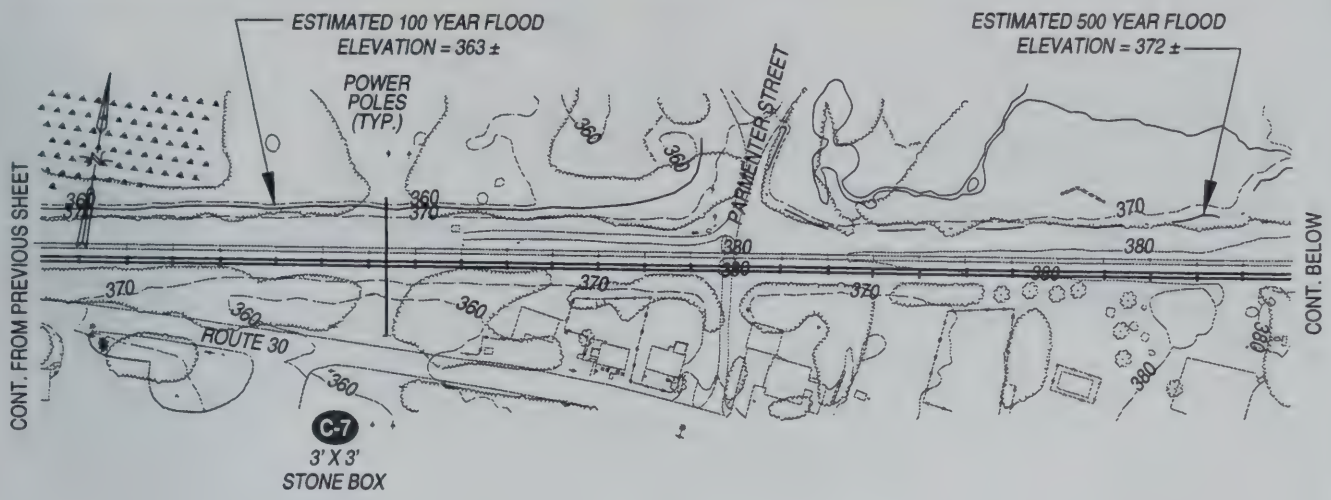
Massachusetts Bay Transportation Authority

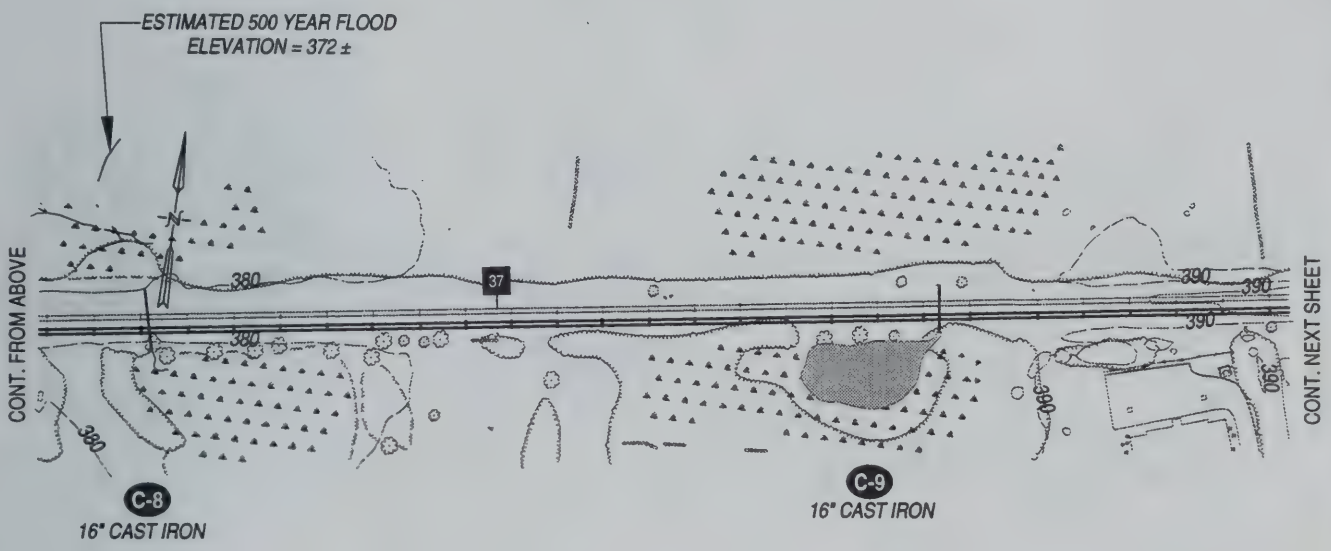
Approx. Scale: 1" = 200'

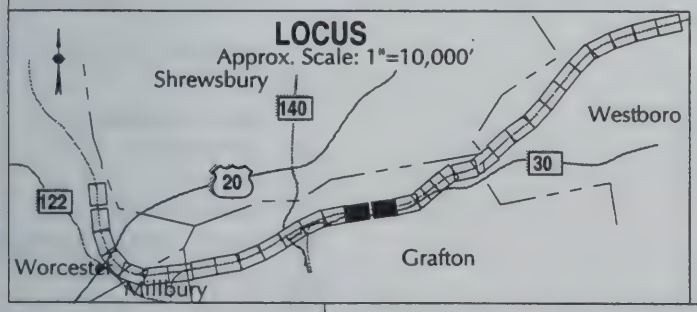
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 7 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

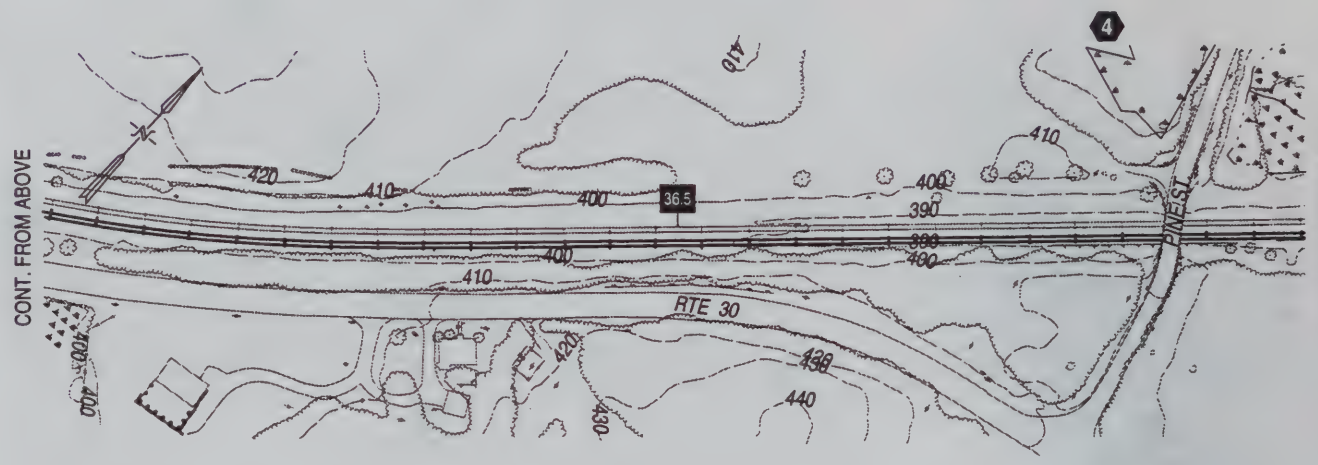
Massachusetts Bay Transportation Authority

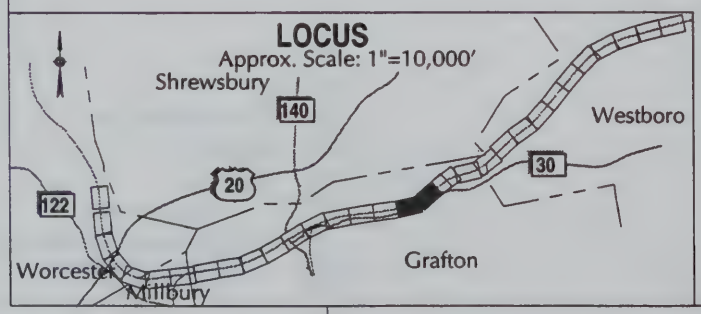
Approx. Scale: 1" = 200'

0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 8 OF 16





LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

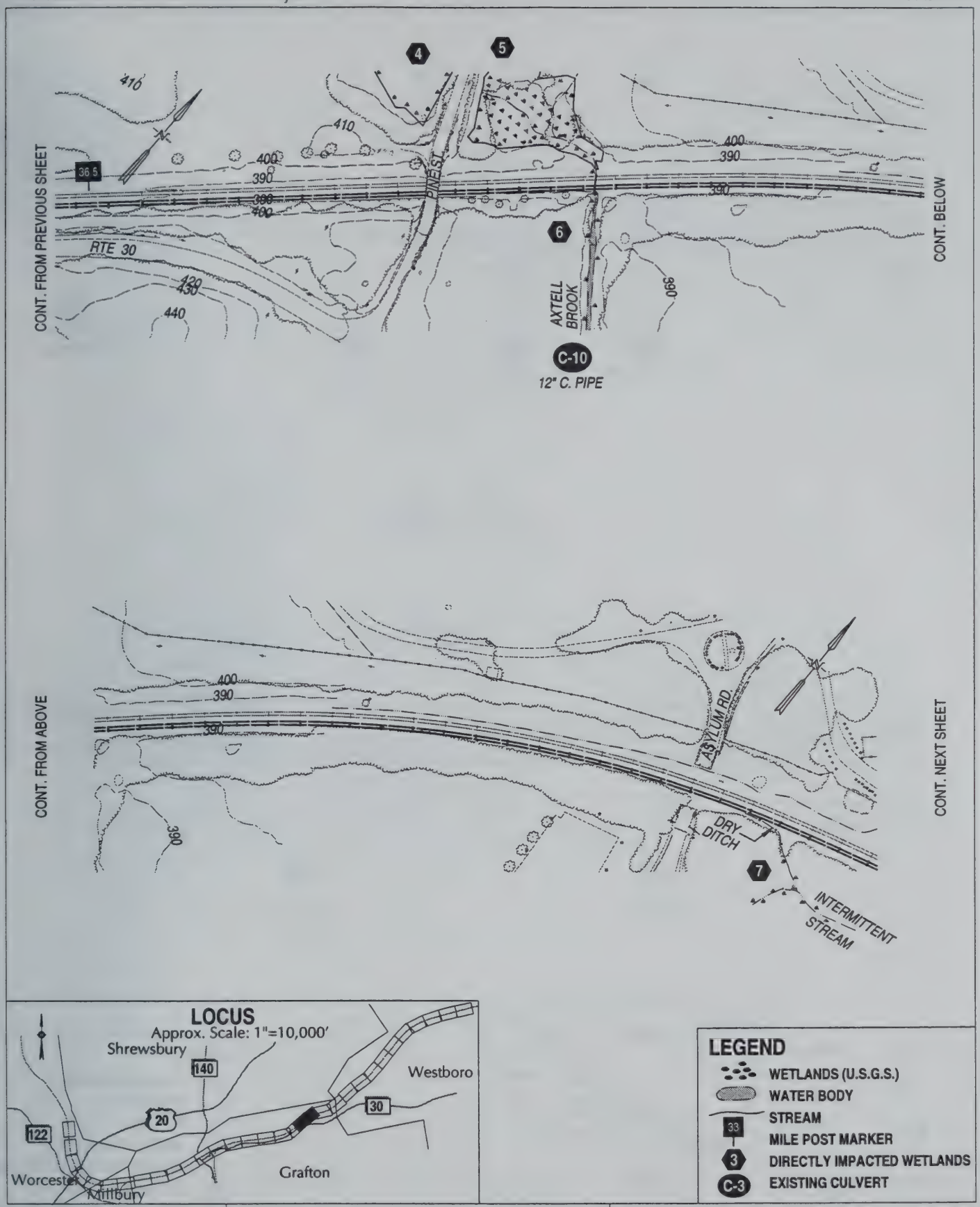
Massachusetts Bay Transportation Authority

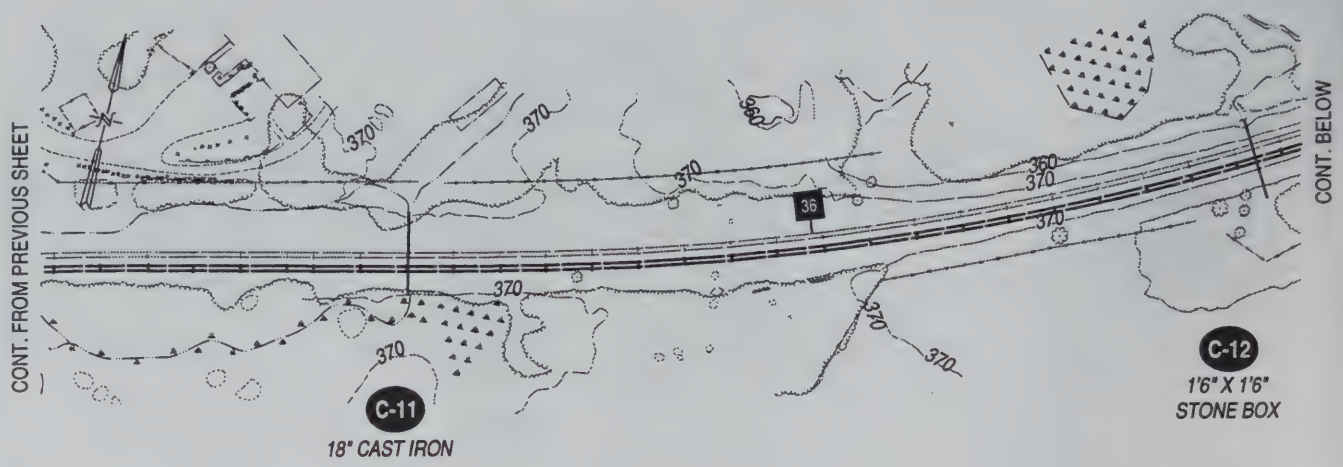
Approx. Scale: 1" = 200'

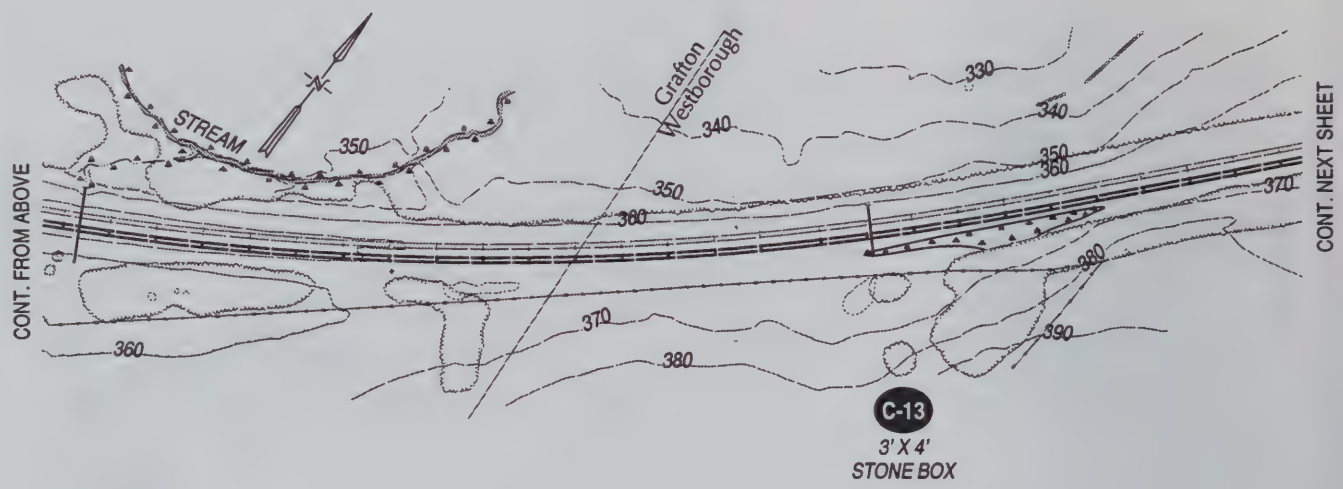
0 200

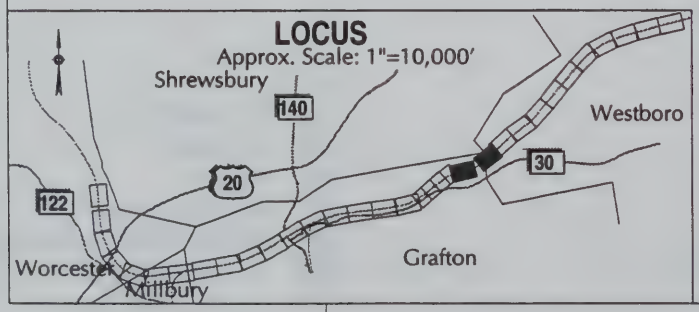
CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 9 OF 16


CONT. FROM PREVIOUS SHEET
CONT. BELOW
36.5
RTE 30
PINE ST
AXTELL BROOK
C-10
12" C. PIPE
CONT. FROM ABOVE
CONT. NEXT SHEET
ASYLUM RD.
DRY DITCH
INTERMITTENT STREAM
LOCUS
Approx. Scale: 1"=10,000'
Shrewsbury
Westboro
Grafton
Worcester
Millbury
LEGEND
WETLANDS (U.S.G.S.)
WATER BODY
STREAM
MILE POST MARKER
DIRECTLY IMPACTED WETLANDS
EXISTING CULVERT
Massachusetts Bay Transportation Authority
Approx. Scale: 1" = 200'
0
200
CORRIDOR DRAINAGE AND WETLANDS MAP
FIGURE 4.4-2 SHEET 10 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

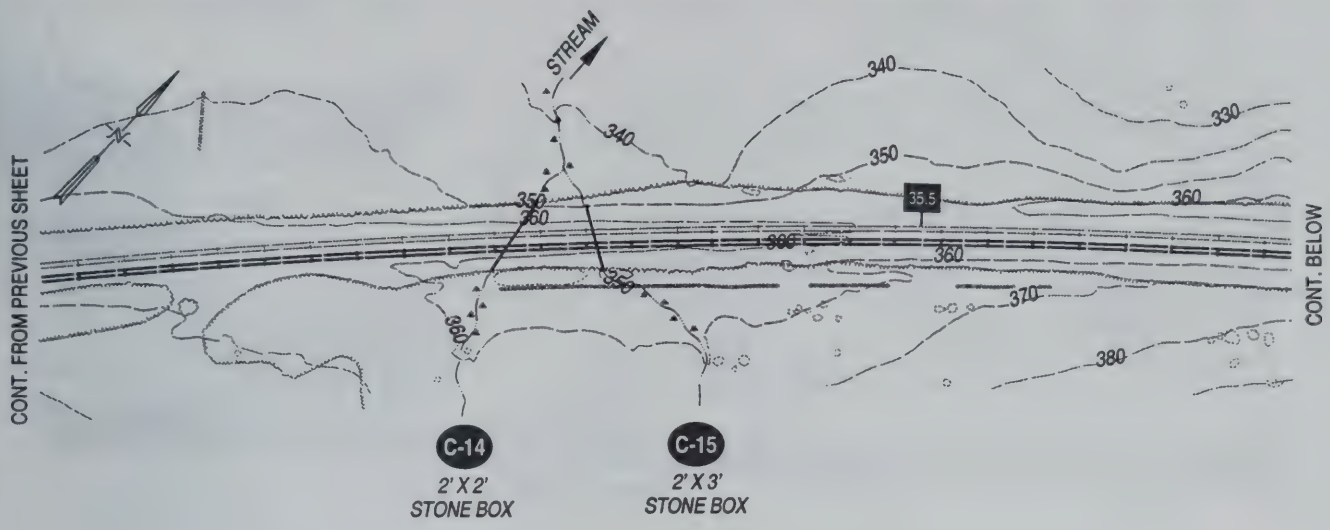
Massachusetts Bay Transportation Authority

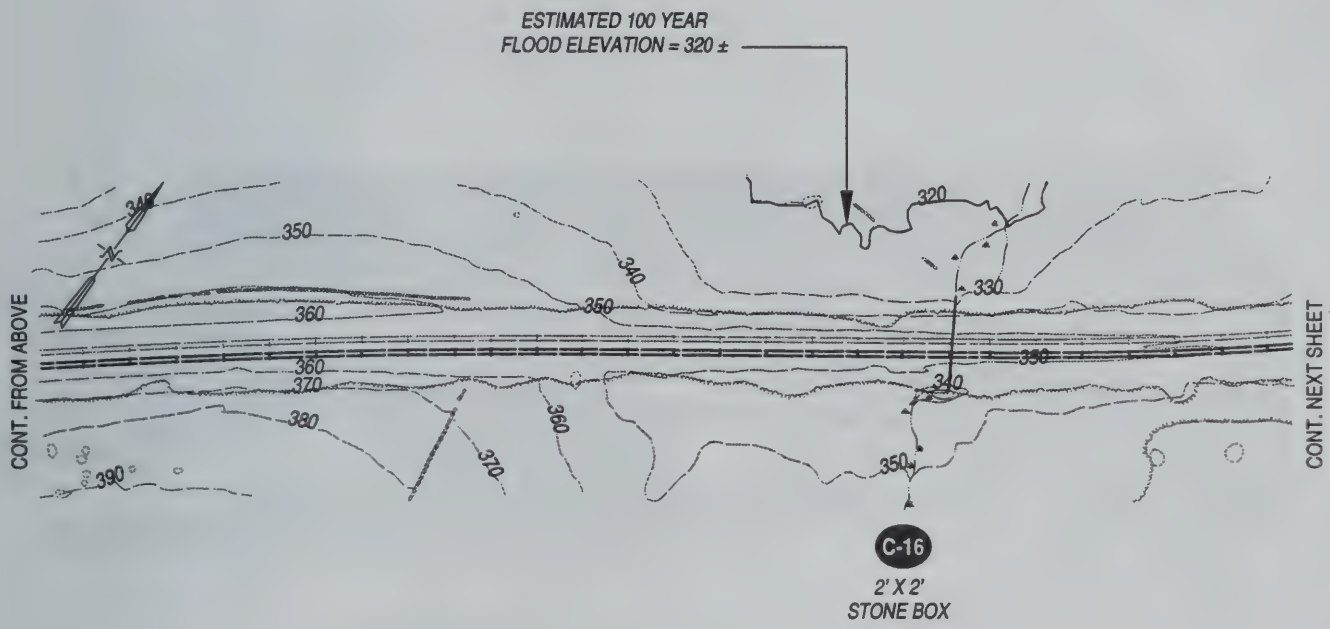
Approx. Scale: 1" = 200'

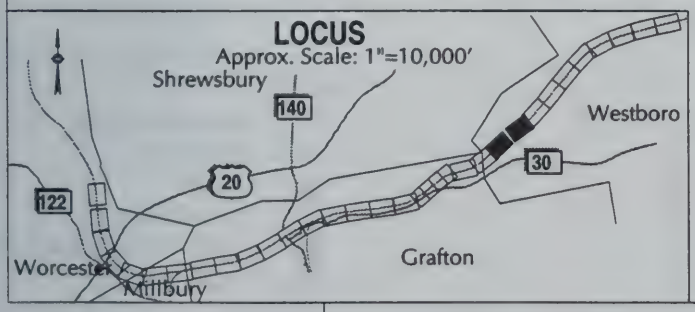
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 11 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

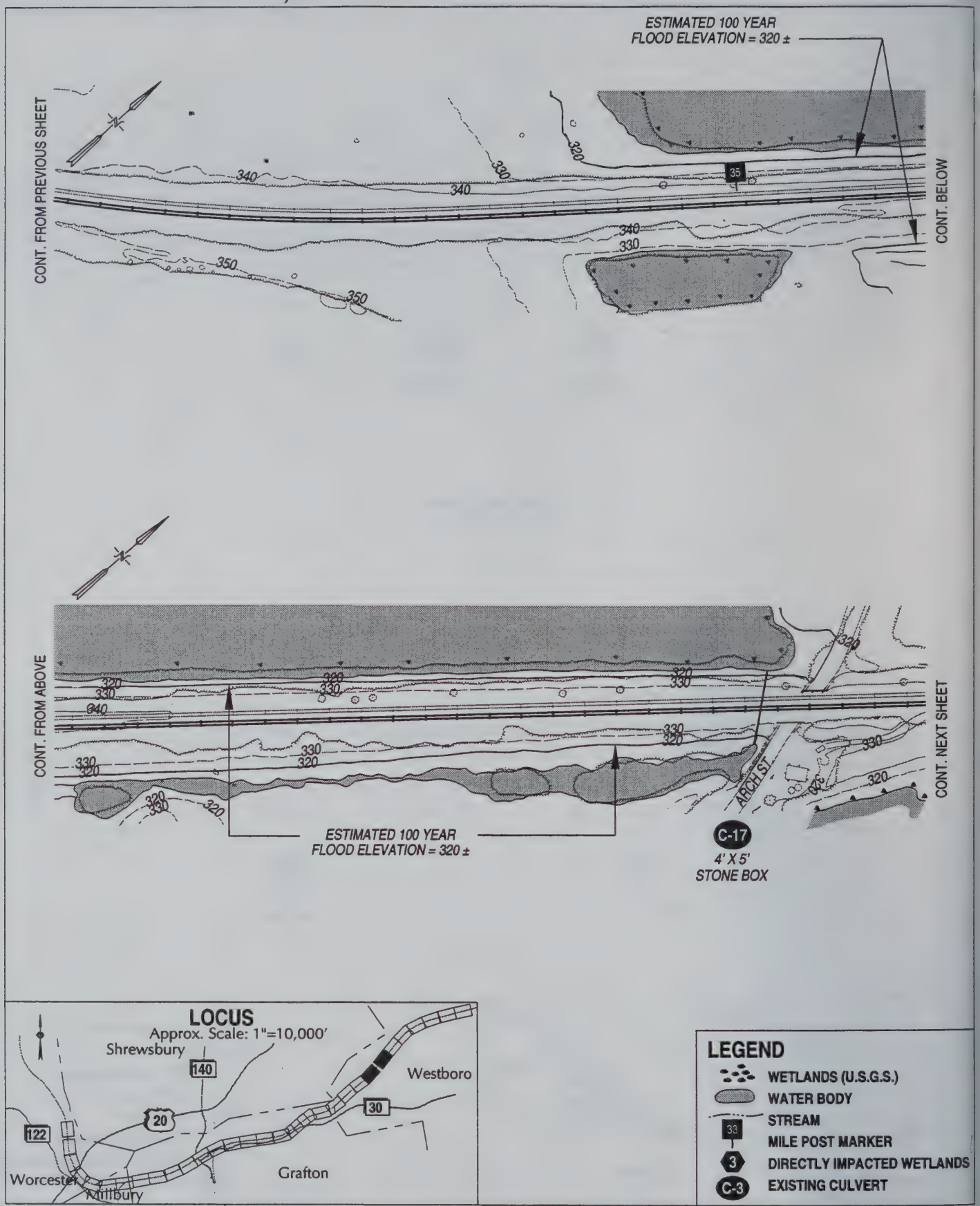
Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 200'

0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 12 OF 16



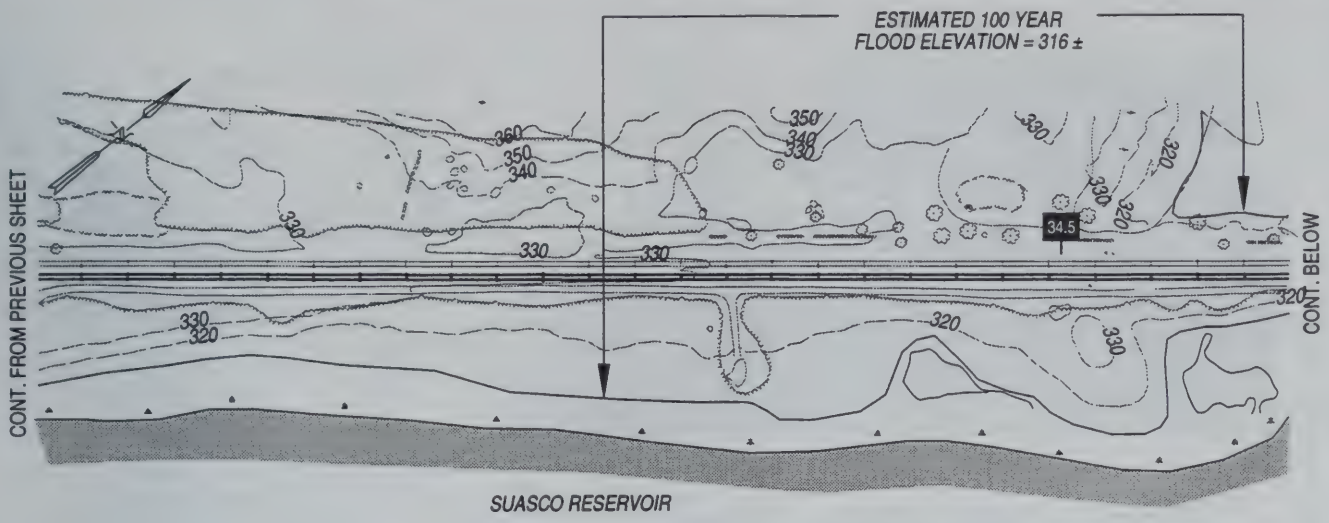
Massachusetts Bay Transportation Authority

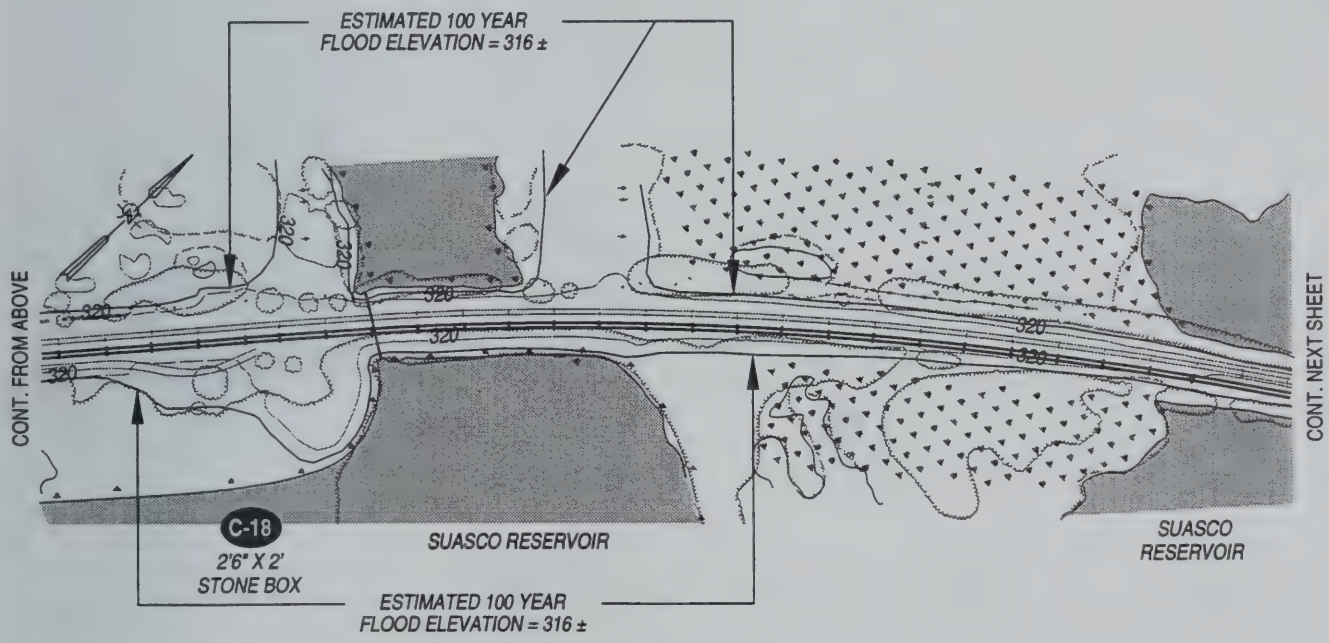
Approx. Scale: 1" = 200'

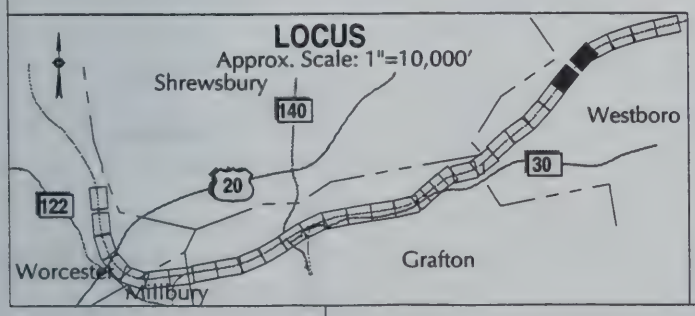
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 13 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

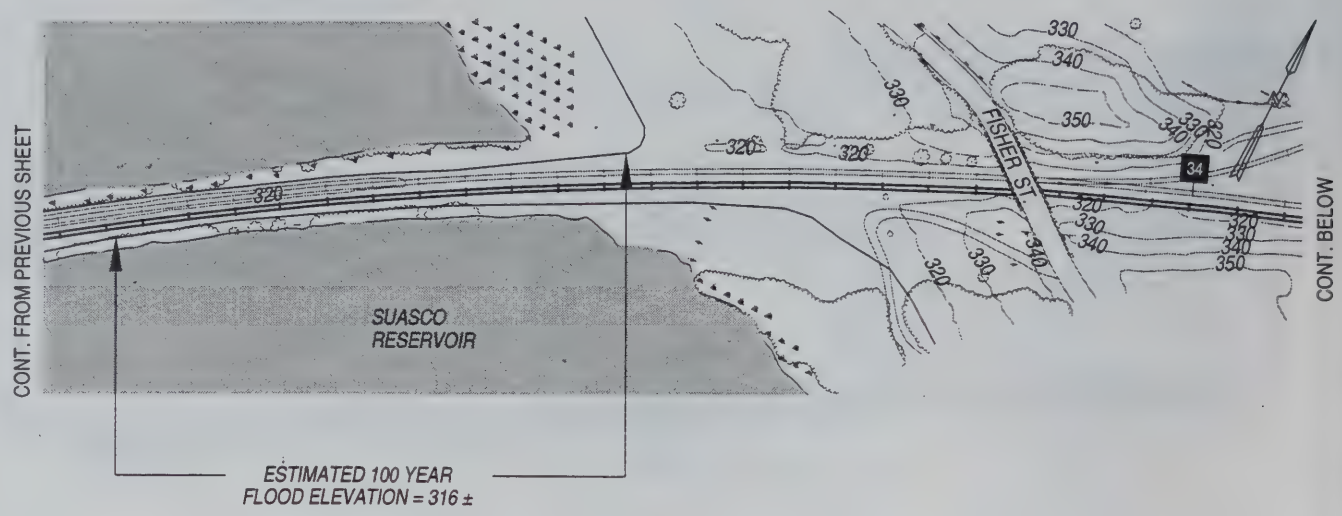
Massachusetts Bay Transportation Authority

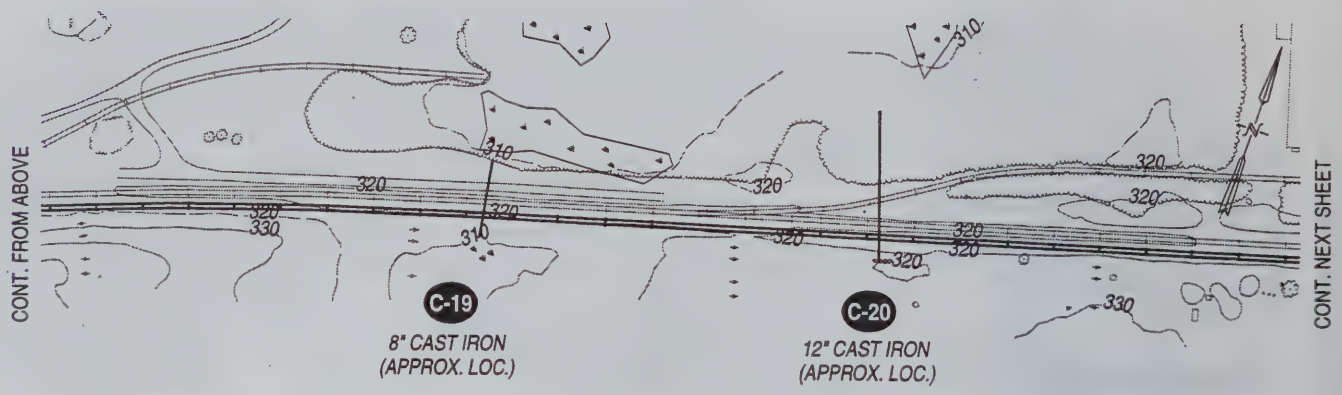
Approx. Scale: 1" = 200'

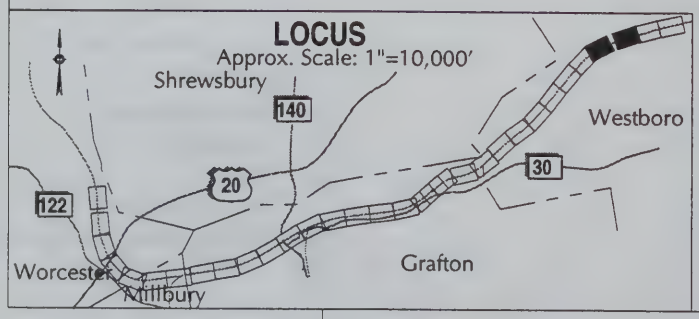
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 14 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

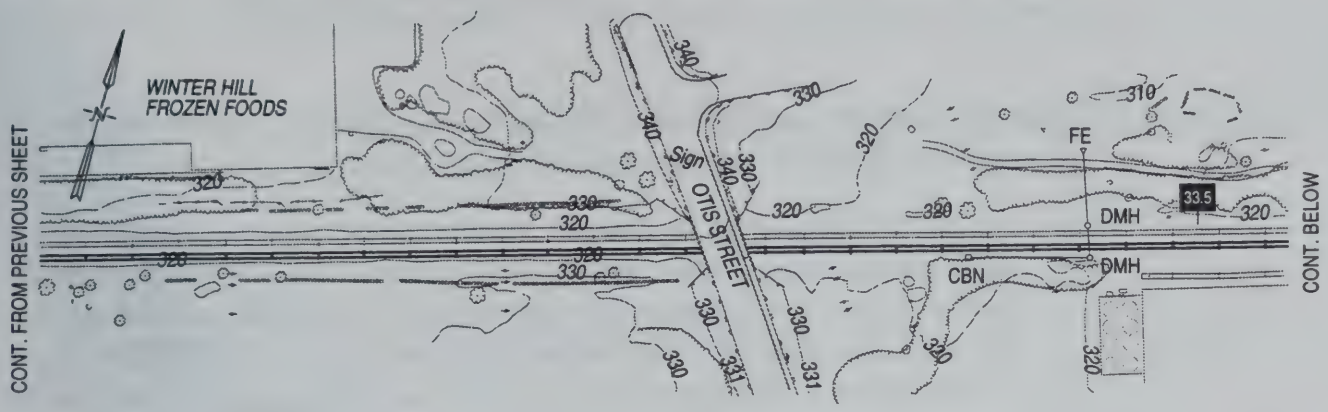
Massachusetts Bay Transportation Authority

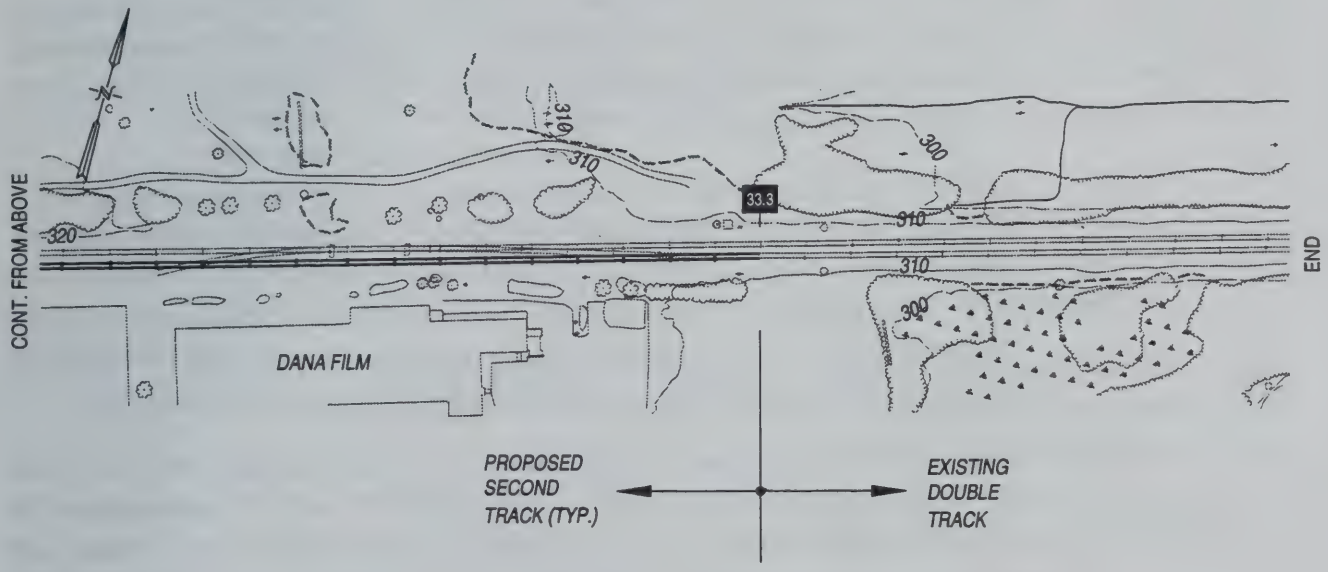
Approx. Scale: 1" = 200'

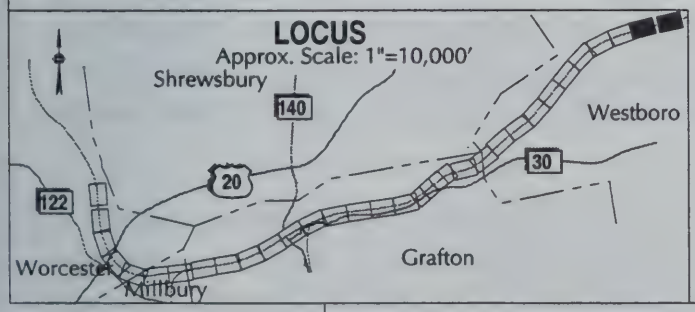
0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 15 OF 16







LEGEND

- WETLANDS (U.S.G.S.)
- WATER BODY
- STREAM
- 33 MILE POST MARKER
- 3 DIRECTLY IMPACTED WETLANDS
- C-3 EXISTING CULVERT

Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 200'

0 200

CORRIDOR DRAINAGE AND WETLANDS MAP

FIGURE 4.4-2 SHEET 16 OF 16

The three existing culverts along the right-of-way requiring adjustment due to construction of the track restoration are as follows:

- **Culvert C-4, Milepost 38.24** - Culvert C-4 is an existing stone arch bridge carrying railroad traffic over a narrow body of water which connects Flint Pond and Hovey Pond in Grafton. Existing stone ballast from the railbed occasionally slides down into the water. The proposed project will include extending the culvert wingwalls and regrading the area to reduce or eliminate any further displacement of ballast into the waters below.

- **Culvert C-4A, Milepost 37.83** - Culvert C-4A is an existing 12" cast iron pipe connecting catch basins on both sides of, and running under, the railroad tracks. The culvert was designed to collect stormwater from both sides of the tracks, connect into the town stormdrain collection system, and ultimately discharge into Big Bummet Brook. The catch basin on the south side of the tracks and the culvert itself were located by survey and were confirmed by field inspection, however the catch basin on the north side could not be located. It is assumed that this catch basin has clogged up or been filled over. The proposed construction in this area will include excavating to remove the old catch basin, uncover culvert C-4A, and construct a new catch basin at the same location.

- **Culvert C-10, Milepost 36.35** - Culvert C-10 is an existing 12" cast iron pipe which runs under the railroad tracks carrying surface and ground water from the north side of the railroad to the south side. The proposed restored track will be constructed with a 14'-0" centerline clearance from the existing track (to accommodate a future Grafton Rail Station). This additional clearance width will necessitate extending the culvert approximately four feet and rebuilding the existing concrete headwalls.

In addition to the above mentioned adjustments to existing culverts, one new cross culvert is proposed. This culvert will be a 12" reinforced concrete pipe constructed at Milepost 33.53 in Westborough, just east of the Otis Street bridge. Surface and groundwater collects and often is trapped in the area of the bridge and railroad tracks creating a potentially damaging situation (ice build up, frost heaves, etc.). In an effort to alleviate this situation, the work will include construction of subdrains through this area to collect the trapped water and discharge it to the north side of the tracks via the additional cross culvert.

No impact to flood storage capacity will occur along the railroad right-of-way. Inspection of the flood insurance rate maps indicates several areas of the mainline crossing near graphical limits of a 100 year flood. In some cases an elevation study has been done and this limit has been transferred to the 200 scale maps. In areas where no elevation study

has been done, an estimated 100 year flood crest has been approximated utilizing the graphical areas overlayed on contour maps.

4.5 Wetlands

Overview

The right-of-way for the Boston and Albany Line was constructed in the 1830's and extensive cutting and filling was carried out to minimize grades on the rail line. Wetlands were crossed on filled embankments, and streams were either bridged or carried in a culvert. In some areas, the embankment is more than 20 feet high. All of these alterations have been in place for more than 100 years.

The wetland resources in the vicinity of the railroad corridor are associated with three major drainage systems: the Blackstone River, the Assabet River, and the Sudbury River. These resources also include the Great Cedar Swamp [an Area of Critical Environmental Concern (ACEC)], habitat for state protected species, the SUASCO Reservoir, ponds, rivers, streams, man-made drainage ditches, associated bordering vegetated wetlands, and aquifer protection zones.

This section discusses potential direct impacts to wetlands resulting from track work along the railroad right-of-way. Indirect impacts associated with bridge and culvert repairs, vegetation management, and railroad operations also are discussed.

Between Worcester and North Grafton, the railroad right-of-way lies within the Blackstone River Basin. The dominant natural features include Lake Quinsigamond, Flint Pond, Hovey Pond, Big Bummet Brook, and Summet Brook, each with their associated bordering vegetated wetlands. Tributaries to Lake Quinsigamond are native trout streams and spawning habitat for smelt. Hovey and Flint Ponds are warm water ponds which support common warm water fish species.

Between North Grafton and Westborough, the railroad corridor lies within the Assabet River Basin. The dominant natural feature is the SUASCO Reservoir that was created in the mid 1970's at the headwaters of the Assabet River. This site is identified as the A1 site in the Corps of Engineers list of dams since it is the first dam site on the Assabet River. SUASCO is an acronym for the Sudbury, Assabet, and Concord Rivers. The Sudbury River joins with the Assabet River in Concord to form the Concord River. The Reservoir is a large mouth bass fishery and also is stocked with Northern Pike and Tiger Muskie. Hocomonco Pond, a SuperFund site, is located north of the railroad in this area.

A Great Blue Heron rookery, within the SUASCO impoundment, is approximately one quarter mile from the track. The colony has been declining in recent years because the trees that were flooded when the area was impounded are gradually falling, thus reducing the number of nesting sites. The state ornithologist has been studying the colony for years and is of the opinion that current train operations have no adverse impact on the birds and that the proposed increase in activity on the rail line will not affect the colony.

Between Westborough and Framingham, the railroad lies within the Sudbury River Basin. The dominant natural features along this area are the Great Cedar Swamp ACEC, which forms the headwaters of the Sudbury River, and the Sudbury River itself, which flows alongside the railroad through Southborough, Ashland, and Framingham. The ACEC is discussed in Section 4.6 as it relates to rare and endangered species.

There are several impoundments along the Sudbury River. These are associated with former textile mills or former drinking water supplies. The impoundment adjacent to the proposed station site in Southborough, known locally as Cordaville Mill Pond, supports warm water species and is stocked with trout. The MDC reservoirs in Framingham, no longer used as water supplies, are warm water bass/pickerel ponds.

Wetland Identification

Wetland resources within the project impact area have been identified by a multi-tiered identification process. U.S.G.S. topographic maps have been reviewed and field checked. Aerial photogrammetry carried out for the project also has been reviewed for wetland areas and field checked. Various plans on file with local conservation commissions, the Department of Environmental Management, and the Natural Heritage and Endangered Species Program have provided additional information on wetland areas and rare species habitat. Wetland areas near the proposed Grafton and Westborough stations have been flagged and surveyed. Wetland areas near the Ashland and Millbury station alternatives have been field checked and given approximate boundaries pending a decision on the preferred station location.

The location of wetland resources along the portion of the right-of-way where construction of the restored second track is proposed (between Milepost 40.3 and Milepost 33.2) is shown on a key map, Figure 4.4-1, with accompanying 1" = 200' scale plans shown in Figure 4.4-2, sheets 1-16. The 1" = 200' scale plan indicates the composite of the multi-tiered wetland identification process. Wetland resources along the remaining portion of the right-of-way that is already double-tracked are shown on Figure 4.0-1, Panels 1 through 9, Environmental Resources Project Corridor.

Wetland Impacts

Although the second track between milepost 40.3 in Worcester and milepost 33.2 in Westborough was removed approximately ten years ago, the ballast has been maintained and is in relatively good condition. Replacement of the removed second mainline track is proposed as part of this project. Along the railroad right-of-way between milepost 44.4 and milepost 40.3 is an existing second track that currently is used as a siding. The existing track and railroad ties are in poor condition and will be replaced with continuously welded rail and new wooden ties, also as part of this project.

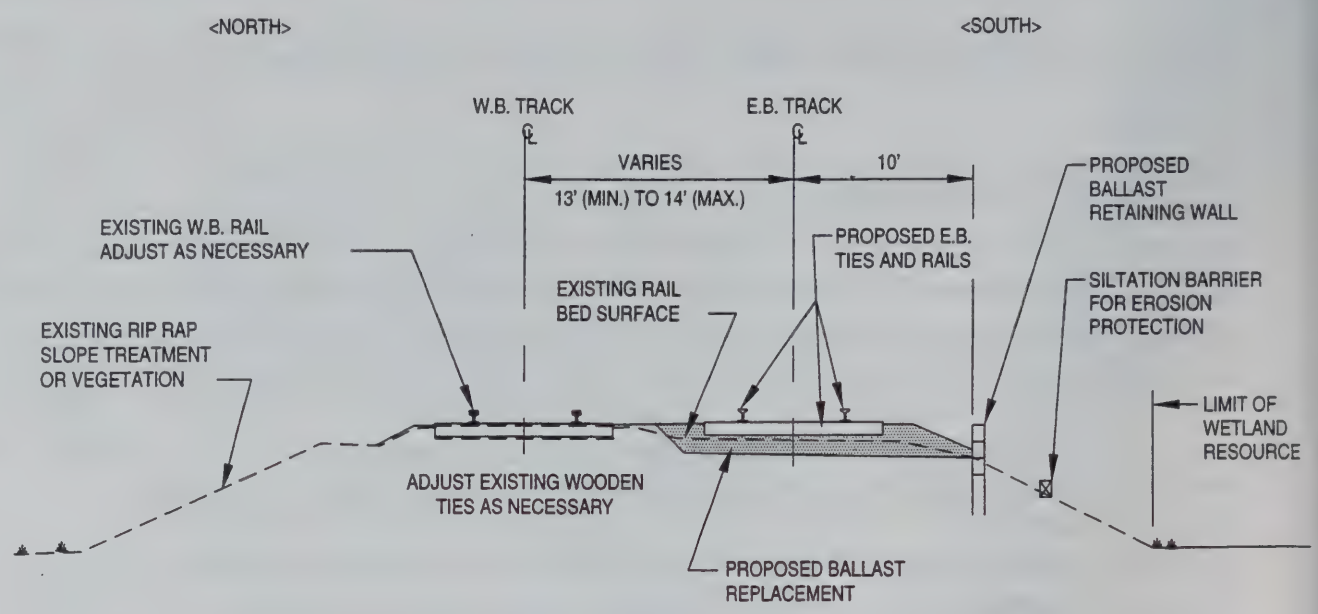
Review of preliminary design plans for the second track along the rail right-of-way, between MP 33.2 and MP 40.3, indicates the potential only for minor impacts to wetlands adjacent to the right-of-way. A preliminary assessment has identified wetland areas that might be affected by the slight widening or grading of the embankment that is necessary to accommodate Conrail's requirement for a thirteen foot minimum distance between the centerlines of the two tracks (with fourteen foot distance at station locations). Although the embankment carried two tracks at one time, the current design criterion for distance between the two tracks requires a slight widening of the embankment in some areas.

Potential impacts to wetlands along the right-of-way, which are adjacent to areas where the embankment will be widened, will be minimized or eliminated by construction of ballast retaining walls. Figure 4.4-3 indicates a typical cross section for these areas. The retaining walls not only will minimize or reduce impacts from the proposed work, but also will serve to reduce existing impacts where the railroad ballast has been observed in the adjacent wetlands.

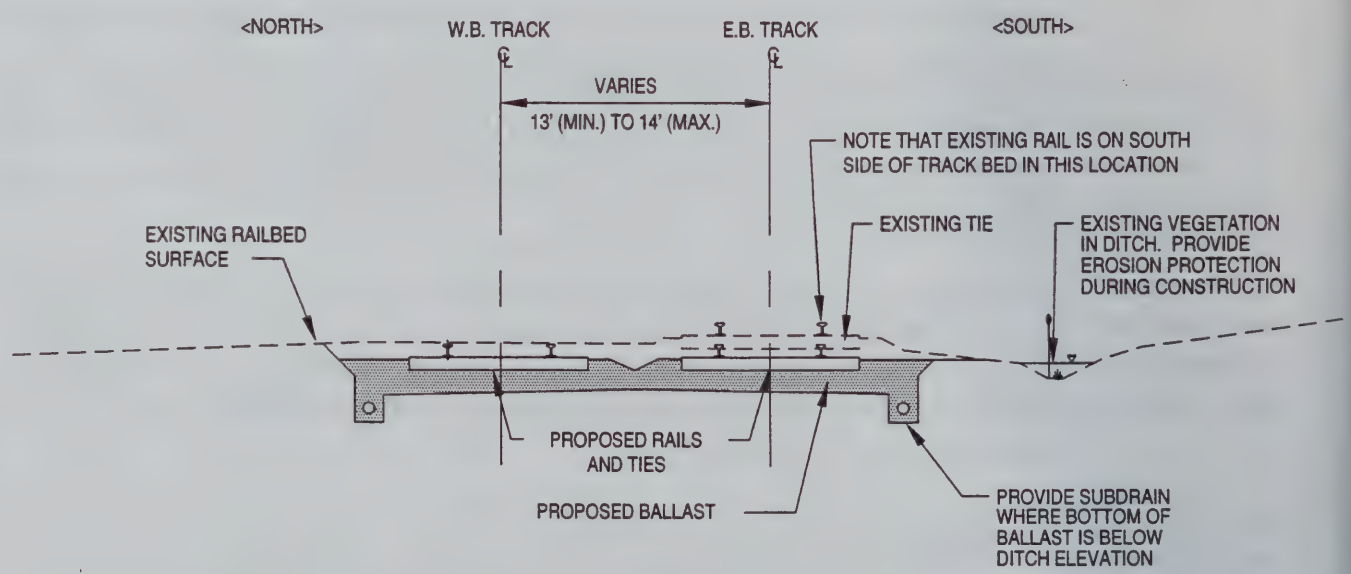
Potential impacts to specific wetlands along the right-of-way resulting from the relocation of drainage ditches, the extension of culverts, and repair or replacement of some bridges and culverts are discussed below. These wetland areas are identified on Figure 4.4-1, sheets 1-3, with number designations 3, 6, and 7, and are identified on the 1" = 200' scale plan, Figure 4.4-2, sheets 1-16.

Wetland Area 3

Wetland Area 3, a drainage ditch in Grafton that extends from the railroad pedestrian underpass near Westborough Road to the Route 140 overpass, is shown on Figure 4.4-2, Sheet 6. It is a narrow, shallow ditch approximately 1,050 feet long that supports wetland vegetation in some sections but is composed mostly of ballast. The ditch is not connected to any stream or other wetland area.



TYPICAL SECTION ADJACENT TO WETLAND RESOURCES



SECTION NEAR RTE. 140 BRIDGE SHOWING TYPICAL REGRADING ADJACENT TO VEGETATION DITCH

Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 10'

0 10

DRAINAGE AND WETLANDS IMPACT DETAILS

FIGURE 4.4-3

The proposed design of the restored track has been revised to eliminate any filling of this drainage ditch. Any construction related impacts will be minimized by installation of erosion control devices (see Figure 4.4-3).

Wetland Area 6

Wetland Area 6 is the portion of Axtell Brook in Grafton adjacent to the existing 12" railroad culvert crossing (Culvert C-10) near Pine Street, and can be located on Figure 4.4-2, Sheet 10. The channelized brook drains areas upgradient and north of the railroad.

Culvert C-10 at Area 6 will be extended approximately 4 feet to accommodate the construction of the second track. The existing culvert headwall also will be reconstructed. Approximately 50 square feet of stream channel will be altered by the culvert extension. Erosion controls such as haybales and temporary check dams will be implemented to protect downstream areas.

Wetland Area 6 meets the jurisdictional criteria of Land Under Water (10.56) and Bank (10.54). The culvert extension will not change the water carrying capacity of the channel or adversely affect water quality or fisheries habitat.

Wetland Area 7

Wetland Area 7 is a drainage ditch in Grafton sparsely vegetated with herbaceous species and approximately 90 feet long and 2 feet wide. It can be located on Figure 4.4-2, Sheet 10. This drainage ditch flows into a bowl shaped wooded wetland adjacent to Asylum Road that collects surface flow from the area of the Tufts University Administration Building. The wetland forms the headwaters of an intermittent stream that flows to a small wetland approximately 400 feet to the east.

Approximately 180 square feet of Area 7 will be altered. The drainage ditch will be replicated at the new toe of slope and function in the same manner as the existing ditch. Erosion control measures will be implemented during construction to isolate the work area and protect the adjacent wetland.

Area 7 meets the jurisdictional criteria of Bordering Vegetated Wetland. The ditch has a distinct linear configuration as defined at 310 CMR 10.55 (4) (c) 2.

Summary - Wetland Impacts

In summary, there will be minimal wetland impacts associated with the reconstruction of the second mainline track. The construction will require the widening or regrading of the existing embankment in some places. Areas where the embankment widening or

regrading is adjacent to wetland resources, ballast retaining walls will be constructed and erosion control barriers installed to avoid impacts to those wetlands.

Table 4.5-1 presents the total amount of alteration to wetlands resulting from work within the right-of-way as well as other elements of the project. Wetland impact areas are identified in the table using the numerical regulatory references of 310 CMR 10.0, the Wetland Protection Act Regulations.

All of the information stated above is included in the Notices of Intent which were filed in the individual communities under the Massachusetts Wetlands Protection Act.

Indirect Wetland Impacts

Indirect impacts to wetlands may result from bridge and culvert repair, track and signal work, fence installation within the buffer zone of wetlands, existing vegetation management activities, and routine railroad operations.

Bridge/Culvert Repair

The bridge that crosses Hovey Pond (Culvert C-4), an historic stone arch bridge, could require repairs to maintain structural integrity if found warranted during construction. The foundation and footprint of the bridge, however, will not be changed and no wetlands will be filled or altered. Silt curtains will be placed around the work area to minimize turbidity and protect water quality.

Track and Signal Work In Buffer Zone of Wetlands

Some of the track and signal work will take place within the 100 foot buffer zone of wetlands. Work within buffer zones which requires any disturbance of soils will be reviewed under the Wetlands Protection Act by the local Conservation Commissions.

Right-of-Way Vegetation Management Plan

The use of herbicides along railroad, utility, and highway rights-of-way is controlled by the Massachusetts Department of Food and Agriculture (DFA) Rights-of-Way Management Regulations (333 CMR 11.00). The regulations require that a five-year Vegetation Management Plan (VMP) be submitted to the DFA for approval. The VMP is a long term management plan which describes the intended program for vegetation control over a five year period. Once DFA has approved the VMP, a Yearly Operational Plan (YOP) must be submitted to DFA for every year application of herbicides is planned.

Table 4.5-1 Track and Layover Wetland Impacts

Wetland Identification #/Town	Figure No. 4.4-2	Type of Wetland (310 CMR Section)	Project Element	Alteration in SF of BVW	Alteration in SF & CF of BLSF	Alteration in SF & CF of ILSF	Alteration in LF of Bank	Alteration in SF of Land Under Waterway
3/Grafton	3	(Non-Jurisdictional) ILSF 10.57 (1) (b)	Track Work					
5/Grafton	9	BVW 10.55	Road/Bridge Realignment (by MHD)	(by MHD)				
6/Grafton	10	Bank 10.54; BVW 10.55; Land Under Waterway 10.56	Track Work				10	50
7/Grafton	10	BVW 10.55	Track Work	180				
TOTALS				**180 sf**			**10 lf**	**50 sf**

SF = Square Feet and CF = Cubic Feet

Vegetation along the rail right-of-way within the project area is managed by Conrail through the use of herbicides. Most of the right-of-way is considered a No Herbicide Zone or Limited Herbicide Zone because of wetland and water supply or residentially sensitive areas. The herbicides used are recommended for use in sensitive areas by DFA. No herbicides are applied within 10 feet of any wetland, water course, or water body. Herbicides are not applied within 400 feet of any municipal water supply well, within 50 feet of any private drinking water wells or within 100 feet of any surface drinking water supply. Residential and agricultural areas also have restricted spraying.

Conrail currently has an approved vegetation management plan for the right-of-way pursuant to the DFA regulations. The existing vegetation management program will not be changed or affected by the project.

Railroad Operations

Current operations on the line include Amtrak intercity and Conrail freight. Potential pollutants associated with rail operations would include hydrocarbons, carbon and metal particulates associated with brake linings, curve lubricators, fuels, and oil. There is no conclusive evidence available regarding the impacts of pollutants from rail beds on water quality and wetlands. The Federal Railroad Administration has not undertaken studies similar to the Federal Highway Administration's report, *Constituents of Highway Runoff.*

There is currently an average of 12 to 15 freight trains runs a day and 2 scheduled Amtrak runs. Each commuter rail train would consist of one locomotive and a maximum of nine coaches. Freight trains can consist of as many as 80-90 freight cars pulled by two or three locomotives. Amtrak trains are pulled by one engine. As part of the preliminary station site assessments for hazardous materials, some ballast samples were obtained and analyzed. No polychlorinated biphenyls (PCBs) and only low levels of petroleum hydrocarbons (PHCs) were detected in the ballast. No significant change is expected with the proposed commuter rail operations. The restoration of the second track will not in itself increase other types of operations on the line.

4.6 Rare Species and Ecologically Significant Natural Communities

The Natural Heritage and Endangered Species Program (NHESP) has been contacted regarding rare species and ecologically significant natural communities. Additional information from the certification records was obtained regarding vernal pools in the Great Cedar Swamp ACEC. An accurate boundary of the Great Cedar Swamp ACEC was

provided by the Department of Environmental Management ACEC Program (See Figure 4.6-1). Rare or endangered fish species information was obtained from the Division of Fisheries and Wildlife in the Department of Fisheries, Wildlife, and Environmental Law Enforcement.

Superimposed on Figure 4.0-1 are the boundaries of estimated habitats of state-listed rare wetland wildlife and high priority sites of rare species habitats and Exemplary Natural Communities taken from the 1995-1996 Atlas of Estimated Habitats. In addition, the presence of other significant natural communities has been noted on Figure 4.0-1.

None of the surface waters adjacent to or traversed by the rail right-of-way are known to have any rare or endangered fish species. The rivers and streams in the area do, however, provide important habitat for trout, smelt, and common warm water species. The upper Sudbury is stocked with trout and supports trout throughout the year. The tributaries to Lake Quinsigamond are also native trout streams and provide spawning habitat for smelt. The potential for adverse impacts to fisheries is related to construction activities that would result in increased turbidity or other water quality impacts resulting from parking lot runoff. Best Management Practices to control construction related erosion will be implemented during all construction activities.

Rare species have been recorded in the vicinity of the railroad right-of-way. The Golden-Winged Warbler has been recorded west of the Ashland station sites. The NHESP is of the opinion that the project does not have the potential to adversely affect the Warbler. The Wood Turtle is known to occur in Southborough, north of the proposed station site. The Spotted Turtle is known to occur in several locations in the vicinity of the rail bed, including north of the proposed Southborough Station, in the Cedar Swamp ACEC and other locations in Westborough and in North Grafton. Three certified vernal pools are located in the Cedar Swamp ACEC. Other vernal pools have been located on Figure 4.0-1, but they are far removed from the rail right-of-way. Project construction is not expected to affect any of the above species or resources.

Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 1750'

0 1750

WESTBOROUGH CEDAR SWAMP AREA OF CRITICAL ENVIRONMENTAL CONCERN

FIGURE 4.6-1

4.7 Fencing

Fencing along railroad rights-of-way can provide benefits in terms of safety and security but also creates potential environmental impacts associated with wildlife movements and the visual environment.

Most of the railroad right-of-way between Framingham and Worcester currently is not fenced. Much of this corridor lies within land areas which create a natural barrier between the railroad and adjacent development. These natural barriers include the Sudbury River, extensive wetland areas, floodplain, steep embankments and rock cuts. In areas of higher population and urban land use, there are segments of private fencing. Within the Worcester city limits, much of the right-of-way has been fenced by adjacent property owners. The existing fencing varies in size and type.

Conrail generally minimizes fencing along its rights-of-way in an effort to reduce maintenance requirements. The MBTA's policy, in general, is to locate fence along rail corridors where residential, recreational, or school property is located adjacent to the right-of-way and no natural barriers exist. The rail corridor between Worcester and Framingham was field inspected and areas of concern for safety or security were identified.

Wildlife Movement

Railroads, like other transportation corridors such as highways and rivers, can act as either barriers or conduits for the movement of wildlife.

The railroad corridor the project would use has been part of the environment and in continuous active use for rail transportation for well over 100 years. The construction of the rail bed affected the natural environment by changing drainage patterns, filling wetlands, disrupting ranges of small mammals, and altering or inhibiting migration patterns of large mammals. Various impacts on ranges and food sources would have either eliminated an isolated population or stimulated it to compete and expand into new ranges. Some species such as hawks and deer frequently take advantage of transportation corridors because of the enhanced hunting grounds or easier "trails" and open grazing areas. The clear rail corridor is an attractive grazing area. Although there are seasonal movements of wildlife populations along the Worcester project rail corridor, there are no large herd movements or intense grazing pressures as in the western U.S. or Canada. The deer in the project area are just as likely to graze on suburban homeowner's backyard shrubs as along open transportation corridors during severe winters.

Another type of wildlife/train conflict can occur where hundreds of cars make up a train set and present a slowly moving "fence" which can inhibit movements of animals during

certain times of the year. This type of conflict does not occur along the Worcester line because, although long haul freight trains can consist of up to 125 cars, they generally consist of an average of 60 cars. The local freight trains generally consist of between 20 and 30 cars. The commuter trains would not have more than nine cars. Also, there are no large herds of migrating deer along the corridor and the Massachusetts Division of Fish and Wildlife deer biologist is not aware of any conflicts between the train operations and deer along the project corridor.

Continuous fencing along the project rail right-of-way, however, would be a new element of the environment for wildlife within the project corridor and has the potential to affect wildlife movements and wildlife/human interactions. For example, in areas such as the Great Cedar Swamp in Westborough and large undeveloped parcels of land in North Grafton and Southborough, the presence of a fence might inhibit established north-south movements of deer to foraging areas or seasonal ranges. The presence of a fence also might serve as a conduit to funnel large animals such as deer or moose toward rail/highway intersections or population centers. Conversations with the state deer biologist indicate that moose sometimes migrate south from New Hampshire during the hunting season. Because of the potential of fencing to affect wildlife, no fencing is proposed along the right-of-way within the boundaries of areas such as the Great Cedar Swamp ACEC and other large undeveloped tracts of land. Within the ACEC, existing fencing at the Conrail Auto Terminal and Cumberland Farms site will remain but will not be extended as part of this project. Other sections of right-of-way that border residential or recreation areas have been evaluated on a case by case basis and are discussed below. This discussion and evaluation of fencing for the project was developed from information gathered from *Landscape Ecology* by R. Formen, consultations with the state deer biologist, and *Ungulate/Train Collisions* by M. Magner.

Safety and Security

New fencing has been proposed for safety reasons at several locations along the right-of-way, as shown in Table 4.7-1. The locations are identified by milepost marker and the approximate length of fencing is given for each site. (Mileposts are shown on Figure 3.1-1).

Where residential, recreational, or school property is located next to the right-of-way, six-foot chain link fencing is proposed. Fencing has also been proposed where it is perceived that the proximity of the land uses adjacent to the right-of-way may create a safety hazard. All fencing associated with the proposed project along the right-of-way and at the stations will be located on property owned and maintained by the MBTA or Conrail. A decision on the location and type of fencing will be coordinated with town officials during final design.

The standard 6-foot high chain link fence would be utilized at most of the fence sites along the right-of-way. High security fencing (a 6-foot high chain link fence with a three strand barbed wire top) will be considered for areas that warrant its use, such as at the layover facility.

Table 4.7-1 Railroad Corridor Sideline Fencing

General Location		Approx. Mile Post	Approximate Length of Fence	
Town	Street		Existing	Proposed
Framingham	Winter Street	22.3	320′ LT*	1300′ LT
	Winter Street	22.3		350′ RT
Ashland	Fountain to Homer	23.8	1850′ LT	
	Front Street	24.1	1000′ RT	
	Homer Avenue	24.2	210′ LT	
	Main to Cherry Street	24.4	630′ LT	580′ RT
	Forest to Metcalf	24.6	530′ RT	640′ RT
	Megunko Road	24.6	260′ LT	250′ LT
	Megunko Road	24.6	160′ LT	250′ LT
	Nyanza	24.8	1270′ LT	
	Ballfields	25.3	740′ RT	
	Olsen Medical	25.9	950′ RT	
Southborough	Southville Road	27.1		930′ RT
	Bridge Street	28.0		1400′ RT
	Bridge Street	28.0		400′ LT
	Town Line	28.3	530′ RT	200′ RT
Westborough	Old Flanders Road	28.8	370′ RT	
	I-495 to Conrail Yard	29.9	3800′ RT	
	East Main Street	31.9	1160′ LT	300′ RT
	High Street	32.2		300′ LT & RT
Grafton	JobCorps	36.2	2100′ RT	
	Parmenter	37.1		500′ LT
	Shrewsbury Road	37.9	1200′ RT	500′ LT
Worcester	Hamilton Street	41.7		600′ LT & RT
	North High School	42.1	1500′ LT	
	Eastview to Plantation	42.5	2400′ RT	
	Plantation Street	42.7	3000′ LT	
TOTAL FENCE LENGTHS			10,360′ LT 13,620′ RT	4,100′ LT 5,300′ RT

LT = southerly tracks; RT = northerly tracks

4.8 Cultural Resources

Historic Properties/Sites

In accordance with the MEPA Certificate for this project, an architectural survey was conducted along the right-of-way. This survey identified properties for which architectural survey forms have been completed. The survey located existing National Register properties in relationship to the proposed project. Properties to be surveyed were grouped according to their proximity to the right-of-way and to proposed station locations. While most of the buildings associated with the project can be grouped with station locations, there is a number of buildings located between stations. In particular, along the right-of-way between the stations, there are 26 bridges for which structure-inventory forms have been completed. Eleven of the bridges are highway bridges and 15 are railroad bridges.

The architectural survey was based upon a right-of-way of 100 feet, i.e. 50 feet from the center line of the existing tracks. This is between 20 and 60 feet wider than the existing right-of-way. This area is extended to properties surrounding proposed station locations. For the most part, these boundaries result in a survey area that is "one property deep." Many of the structures 50 years old and older were built after the original tracks were laid during 1834 and 1835. Although commuter rail was discontinued on this line in 1975, the rail line has seen continuously active traffic since its inception in 1835. Although all structures will be evaluated for visual and construction impact, it is not anticipated that there will be significant impacts because the majority of structures were built after the rail line was constructed and because this is an active rail line.

Impacts on structures along the right-of-way are expected primarily to be visual, with no actual physical disturbance to historic properties. For those buildings and structures adjacent to the project right-of-way which may be affected by the proposed project, the architectural survey forms have been completed and are being reviewed by the Massachusetts Historical Commission. Potential impacts associated with the proposed construction activities within the railroad right-of-way must be classified as a visual effect only. Upgrading of track, or even the installation of a replacement second track over a seven mile length, will not directly affect any historic or potentially historic building or structure. The MBTA considers potential visual effect as minimal or none along this long-established rail corridor.

Archaeological Resources

For the DEIR process, the MBTA performed a reconnaissance archaeological and cultural resources survey over the entire length of the project corridor. The Massachusetts

Historical Commission reviewed and approved the scope of work for the archaeological reconnaissance survey, and the State Archaeologist issued a permit to conduct the archaeological field investigation on April 22, 1993. The archaeological reconnaissance survey was completed in June, 1993. The reconnaissance survey had two main goals, to identify archaeological resources exposed on the surface of the rail corridor, and to model the probability that subsurface archaeological resources exist in the corridor.

The reconnaissance identified several archaeological resources along the project corridor. One of these resources is a prehistoric site that is eroding from the top of a cut through a knoll in Cedar Swamp in Westborough. This location corresponds to a prehistoric site previously documented as part of the Cedar Swamp Archaeological District which is listed in the National Register of Historic Places. Unless addressed, continuing erosion may lead to eventual loss of the site. In addition to this site, the reconnaissance also identified several nineteenth-century cultural resources along the rail corridor. Two of these resources are mill sites on the Sudbury River. One mill lies in eastern Westborough, in the location of a grist and sawmill complex that existed by 1837; the other mill is on the Southborough-Ashland town line, in the location of the Aldrich woolen mill of the 1870s. While project impacts will avoid the Westborough mill entirely, the Aldrich mill extends to the edge of the existing railroad bed, and may be impacted by project construction.

The modeling of potential archaeological sites focused on prehistoric cultural resources. The reconnaissance survey involved systematically recording the conditions of slope, soil drainage, distance from water, and existing disturbance throughout the corridor. The sensitivity model ranks individual sections of the project corridor according to these four factors, and then assigns an overall ranking of high, moderate, or low archaeological potential to each corridor section.

An intensive archaeological study based on the findings of the archaeological technical report has been planned as a component of the preparation of the FEIRs. This survey includes additional, more detailed background research plus subsurface examination of those areas anticipated to contain potentially significant archaeological resources. The permit application for the intensive archeological survey has been submitted and approved by the MHC. The survey is in process. It is anticipated that the possibility of finding intact archaeological sites along the track is unlikely, since the original construction for the railroad disturbed and/or filled many areas.

4.9 Visual Impacts

The rail corridor traverses a variety of urban, suburban, and undeveloped rural terrain. Many of the abutting land uses are industrial activities currently or formerly dependent on rail access. In undeveloped areas, wayside vegetation would restrict views from the train. In limited areas, where the corridor abuts or traverses bodies of water, there will be brief opportunities for scenic vistas.

Since the rail corridor is long established and recent activity is predominantly freight trains, the addition of commuter rail trains is not anticipated to have any significant impact on the visual aspect of the corridor for abutters. (See Section 4.8, preceding, for discussion of potential visual effects on historic properties).

4.10 Hazardous Materials

Typical rail bed contaminants include lubricating oils, diesel fuel, and particulates of carbon, metals, and brake linings. In conjunction with environmental site evaluations of proposed station sites, ballast samples from the mainline tracks were collected for chemical analyses. A total of eight samples were collected at a depth of between 6 inches and 12 inches, using a stainless steel spade. Samples were stored in glass jars for transfer to the laboratory for analysis.

The ballast samples, obtained at sites in Ashland, Southborough, Westborough, and Grafton, were collected at locations along the mainline that are representative of running track, rather than locations such as rail yards where trains may remain stationary for long periods of time. Thus, the results of the analyses can be considered representative of probable conditions along the entire corridor.

Chemical analyses were made to test for the presence of polychlorinated biphenyls (PCBs) using EPA Method 8080 and petroleum hydrocarbons (PHCs) using EPA Modified Method 418.1.

None of the analyses detected the presence of any PCBs. Analysis of the ballast sample from Ashland detected a concentration of 29 parts per million (ppm) of PHCs, which was determined to be lubricating oil. Analysis of the ballast sample from Grafton detected a concentration of 13 ppm of PHCs. In both instances, the detected level is below the most restrictive Massachusetts reportable concentration criterion of 500 ppm for petroleum hydrocarbons in soil. No trace of PHCs was detected in the remaining ballast samples.

Additional sampling and chemical analyses were performed to evaluate the environmental quality of the subgrade and ballast material between MP 33.2 and MP 40.3, the seven mile stretch of track where the eastbound track will be replaced. Samples were collected at 1,500-foot intervals and at four bridge locations--Howe Street in Ashland, Milk Street and Otis Street in Westborough, and Shrewsbury Street in Grafton.

Screening and analysis of discrete and composite subgrade samples included tests for volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs), RCRA 8 metals, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides and herbicides. The results of the analysis conclude that the concentrations of the tested matter are below reporting thresholds. Soils which cannot be used on site can be disposed of at a permitted, lined landfill or other acceptable facility.

The rail corridor has been in continuous use since 1835, with historical daily train activity far in excess of current or proposed future operations. The results of the analysis of collected ballast samples indicate little or no contamination from PHCs. The additional activity resulting from restoration of commuter rail service is not anticipated to result in any significant increase in concentrations of petroleum hydrocarbons along the rail corridor.

4.11 Pedestrian Safety

The three grade crossings of the railroad have existing crossing protection as described in Section 4.1. Where deemed necessary for safety and security, fencing will be constructed on the railroad right-of-way perimeter to restrict access, as described in Section 4.7.

4.12 Construction

Construction related impacts typically involve issues of traffic to and from the work site, air quality, noise and vibration, erosion and sedimentation, and safety concerns.

The construction activity along the rail corridor involves track refurbishing, rehabilitation, and restoration. The upgrading of existing tracks to operational standards required for commuter rail typically will involve highly specialized equipment that travels on the rails. Tie replacement, re-ballasting, and adjustment of rails would result in temporary increases in noise levels from the equipment engines as well as from the work activity.

Over the seven mile segment where the second track will be installed, construction activity will include excavation and grading, which can result in fugitive dust and erosion in addition to increased noise levels.

The application of water by spraying exposed earth surfaces will minimize the potential for fugitive dust from construction vehicle traffic or from wind erosion.

Silt barriers, consisting of hay bales and silt fence, can be effective in trapping sediments from construction site runoff. Limiting the area of earth exposed at any one time will be effective in minimizing both wind and water erosion. Compliance with the requirements of applicable orders-of-conditions issued by local Conservation Commissions will ensure that adverse effects on water quality and resource areas are minimized.

Potential construction noise impacts and possible mitigation are described in the preceding Section 4.3.

4.13 Proposed Mitigation

Railbed improvements are being designed to minimize potential adverse effects on resource areas and as a result no significant impacts are identified along the rail corridor with respect to resource areas. Any work affecting resource areas or within the buffer zone will be reviewed by local conservation commissions and construction will be performed in compliance with any order-of-conditions that may apply.

As described in Section 4.3, vibration levels from MBTA trains will result in possible annoyance at up to 19 residences; however, mitigation measures would not be effective.

SECTION 5.0 ALTERNATIVE LAYOVER FACILITY SITES

Introduction

Passenger train layover facilities typically are provided at the outer terminus of a commuter rail line to eliminate "deadhead" movements, that is, non revenue, non passenger-carrying runs back to a central storage facility at night and out to the end of the line in the early morning. This section provides a discussion of layover site criteria and the process of alternative site identification and evaluation employed in selection of the preferred layover site facility in Worcester.

In addition to providing secure overnight storage of the train sets, a layover facility must provide an electric power source to maintain heat for the locomotive engine while it is shut down. Minimal servicing is performed at layover sites, and is generally limited to topping off locomotive cooling systems, adding lubricating oil, inspection, and cleaning of the train set.

5.1 Layover Site Selection Criteria

The MBTA's "General Guideline for the Design of Passenger Train Layover Facilities" outlines basic elements to be considered in the siting of a layover facility:

- The facility should be located near the last station on the line, to minimize deadhead movements;
- The facility should be located off to one side of the existing main track (if the main track continues beyond the site) and be generally parallel to the main track;
- The length and number of tracks should be adequate to accommodate four, nine car train sets;

- The track layout preferably will be double-ended so that trains can access the main tracks from either end of the layover facility. This design element provides operational flexibility in the event of breakdown or derailment;
- The centerline to centerline distance between a main track and nearest track in the layover facility should be at least 27 feet;
- The site layout should allow for a vehicular access road between tracks for service vehicles; and
- The site should be large enough to accommodate employee parking, a maintenance office/storage building, and an electric power substation.

5.2 Site Identification and Evaluation

A layover facility that provides the desired track geometrics and site amenities requires approximately 6½ acres of land. The rail corridor was inventoried using available maps, track charts and local knowledge to seek potential locations for the proposed Worcester Commuter Rail Extension layover facility.

The basic criteria used for site selection were size and location. A parcel of land had to be large enough to accommodate a layover facility and be located adjacent to or be accessible from the mainline tracks.

The investigations identified thirteen possible sites for a layover facility. Of these, ten are located along the Conrail right-of-way between Framingham and Worcester, and three are located along the Providence and Worcester right-of-way in Worcester. Each site was investigated in the field to aid in evaluation of advantages or disadvantages of that particular location.

Site 1 - Conrail's Neven Yard, Framingham, MP 22.1

This site is located on the north side of the mainline in Framingham, between the Fountain Street bridge and the Winter Street bridge.

Site 1 has sufficient land area for a full facility with all amenities, and has good track and road access. It is likely that use of this site would have little or no potential negative effects, since it currently is an active rail yard. However, it is unlikely that Conrail would be willing to give up use of the facility for freight service. Additionally, this location is 22 miles from Worcester, resulting in considerable deadhead travel.

Site 2 - Westborough Auto Yard, MP 30.5

This site is located just west of the existing Conrail auto distribution yards in Westborough, on the north side of the right-of-way, about 0.8 miles west of Route I-495.

Site 2 has sufficient land area for a full facility with all amenities, has good track access, and road access could be provided through the existing rail yard just east of this site. The major disadvantage to this site is its location within the Great Cedar Swamp, which is an Area of Critical Environmental Concern (ACEC). Construction costs would be high due to the presence of ledge, and the site is 15 miles from Worcester resulting in considerable deadhead travel.

Site 3a - Westborough, Bay State Abrasives, MP 31.1

This site is located on the south side of the right-of-way at MP 31.1, just east of the Bay State Abrasives major facility.

Site 3a has sufficient land for a full layover facility. However, it would require filling a portion of the Great Cedar Swamp, which is an ACEC. Also, the distance from Worcester would result in considerable deadhead travel.

Site 3b - Westborough, Former Freight House, MP 31.6

This site, located on the south side of the right-of-way, is the lead track to the former Westborough freight house.

Site 3b has sufficient area for only a single-end, two track facility, with amenities. There is good road access. There would be limited access to train sets for maintenance and cleaning. A crossover track would be required to access the westbound mainline. The existing track on the site is a public delivery track. One access road to Bay State Abrasives would have to be closed. There is adjacent residential development. The site is 13 miles from Worcester resulting in considerable deadhead travel.

Site 4 - Westborough, Smith Valve, MP 33.9

This site, located on the north side of the right-of-way, is an existing siding formerly used to service the Smith Valve property.

Site 4 has sufficient area to provide a single-ended facility with all amenities. Land area is basically uniform, at track level, and site development would not require extensive reshaping of the terrain.

Nearby residential development makes this site undesirable. A crossover track will be required if the second mainline track is restored; and the site, which is also a possible station site, is located 11 miles from Worcester.

Site 5 - North Grafton, G & U Railroad, MP 37.9

This site, located on the south side of the right-of-way, is owned by the Grafton and Upton Railroad and is used as a freight yard.

Site 5 has adequate space for only a single-ended layover facility, provided changes were made to the G&U railroad tracks.

Access to the site is via a grade crossing of Route 30; a new crossover is required if the second mainline track is restored; the site is too small to develop access to trains for maintenance and cleaning; there are probable environmental concerns, including adjacent residential areas, and the facility is located 7 miles from Worcester.

Site 6 - Millbury, Wyman-Gordon Property, MP 38.2

This site is located on the south side of the right-of-way just west of the Millbury-Grafton town line.

Site 6 has sufficient land for only a single-ended facility; the surrounding land is industrial, and good road access can be developed.

Disadvantages include the requirement for an additional crossover if the second mainline track is restored; the site also is proposed as a possible commuter station; and it is located 5.2 miles from Worcester.

Site 7 - Worcester, at Route 20, MP 39.9

This site is located on the north side of the right-of-way, just east of the Route 20 crossing.

Site 7 can accommodate only a single-ended layover facility, and good road access is available.

The track turnout must come off the inside of a 3 degree curve; an additional crossover will be required if double track is restored; the property is below grade, requiring a long lead track; the site is currently used for industrial purposes and would require relocation of several businesses; and the site is 4.5 miles from Worcester Station.

Site 8 - Worcester, Conrail Yard, MP 43.5

This site on the north side of the right-of-way, is located just east of the existing Amtrak Station in Worcester.

Site 8 could accommodate only a single-ended facility with four tracks and most of the required amenities. It would allow for good access to the locomotives and most of the train sets, and is located less than 1 mile from the end of the commuter rail service. The surrounding area is industrial and the existing rail yard operations should preclude local opposition.

Topography of the area is such that retaining walls and embankment would be required; there may be conflicts with an existing sidetrack, and access to train sets would be restricted to small vehicles only.

Site 9 - Worcester, Jamesville Yard, MP 47.9

This area is an active Conrail freight yard and is too small for a layover facility.

Site 10 - Worcester, Providence and Worcester RR, MP 44.4

This site is a Providence and Worcester Railroad receiving yard and there is sufficient length to permit only a two track layover facility, located less than 0.5 miles from the commuter rail terminus.

The site would be under control of the P&WR Railroad dispatcher; it is too small to allow for amenities such as parking and service building; and there would be no access to train sets for maintenance and cleaning.

Site 11a - Worcester, Providence and Worcester RR, MP 2.0

This site is located on the east side of the right-of-way adjacent to the mainline of the P&W Railroad's Norwich line, and about 0.4 miles south of the junction with the Conrail mainline.

Site 11a is an active railroad area, with abutting land use consisting of industrial activity and a cemetery; there are no apparent environmental problems.

Extensive track work would be necessary to make the area available; there would be limited access to train sets for maintenance and cleaning; and trains would be under control of the P&W RR dispatcher.

Site 11b - Worcester, Providence and Worcester RR, MP 2.0

This area is about 0.2 miles southerly of Site 11a, also on the east side of the existing tracks.

Site 11b has sufficient area for development of only a single-ended layover facility and amenities; the land is level and at the same elevation as the adjacent track; there is no apparent local opposition to use of the site and no apparent environmental problems.

The trains, however, would be under the control of the P&W RR dispatcher, and the site is 3 miles from the commuter rail terminal station.

5.3 Layover Site Screening and Recommendation

None of the thirteen potential sites identified have all the desired characteristics for a layover facility set forth in Section 5.1.

Rating of the sites was performed using four items ranked as important:

- Area for four train sets;
- Proximity to commuter rail terminal station;
- Access to train sets for servicing; and
- Area for personnel facilities and parking.

Evaluation of the identified sites resulted in elimination of all but three locations. Site 3a, Site 4, and Site 8 were each determined as viable potential sites that could be developed as layover facilities; however, Site 3a has a major environmental concern, in that site development would impact the Great Cedar Swamp, and Site 4 is proposed also as a commuter rail station.

Site 8 offers a location near the commuter rail terminal station, is located adjacent to the interim station, has no apparent environmental issues, and is located in an active rail area with primarily non-sensitive adjacent land uses. This site is the recommended location for development of the layover facility.

SECTION 6.0 ENVIRONMENTAL IMPACTS - LAYOVER FACILITY

Introduction

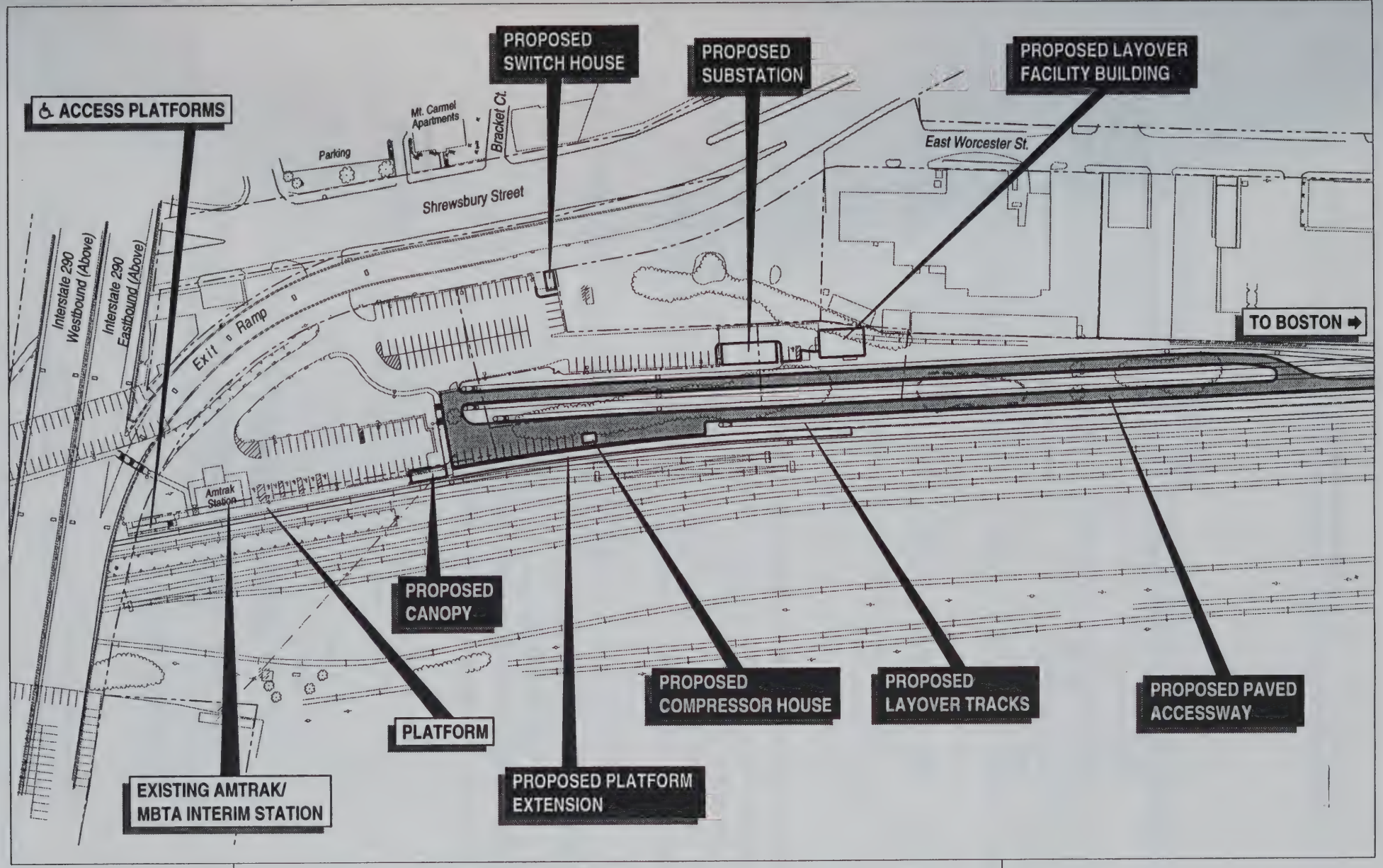
The proposed layover facility, which will accommodate four train sets, will be constructed in an existing rail yard east of the Amtrak Worcester Station at Mile Post 43.5. A site plan of the proposed layover site with preliminary track layout is shown in Figure 6.0-1. There are no sensitive environmental areas on site, such as wetlands or municipal water supplies. The surrounding land use is mostly industrial and includes Conrail yards and the Worcester Department of Public Works garage.

At Our Lady of Mount Carmel Church and Mount Carmel Apartments, the project would result in an increase in Ldn of 1 dBA or less. The layover site design includes provision for electrical power for the locomotive engines during shutdown periods and overnight idling of engines will not be necessary. Since the overall noise level increase is well below the 5 dBA increase criterion for significant impact, no additional mitigation is proposed.

Stormwater from all pavement areas in the layover facility will be collected and discharged into the City of Worcester existing stormdrain system. In the portion of the layover site where locomotives will be parked a separate drainage system will be constructed and connected to an oil separator.

An environmental site evaluation performed for the proposed layover facility and adjacent interim station determined that available evidence does not indicate the presence of oil or hazardous materials in the soil or groundwater other than trace levels of tetrachloroethene detected in one of the five groundwater samples obtained from the project site.

Construction of the layover facility will result in temporary short-term increases in noise, dust and construction related traffic.



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 150'

0 150

SITE PLAN - LAYOVER FACILITY WORCESTER, MA

FIGURE 6.0-1

A temporary layover facility, located in the P&W Railroad's yard west of Union Station, has been in operation since September 1994. An electric power source was installed in April 1995, which eliminated the need to idle the locomotives overnight.

6.1 Local Traffic

The proposed layover facility will provide twenty designated parking spaces for MBTA train crews and maintenance personnel. The layover facility will generate a low volume of traffic, generally at times far removed from the typical A.M. and P.M. peak hours, and thus will have no adverse effect on level of service on adjacent roadways.

6.2 Air Quality

The passenger train layover facility is proposed to be located adjacent to the existing Amtrak Station in Worcester, directly east of I-290. The layover facility would consist of four sets of tracks to provide secure overnight storage for the trains. Trains will idle at the facility in the morning for approximately 45 minutes prior to departure in order to warm up and complete federally-mandated testing procedures. Although the land use of the area surrounding the site consists primarily of rail facilities, highways, and some industry, there is a seven-story apartment building, Mount Carmel Apartments, located approximately 260 feet to the north of the site, separated by Shrewsbury Street and the I-290 exit ramp. This facility is a residence for the elderly and is therefore a sensitive receptor.

Although four locomotives will lay over at the facility, no more than two will be idling concurrently since their start-up schedule is staggered according to their departure times. Based on the proposed schedule of train departures (See Section 3.3.), engines will begin idling on the following schedule:

Train	Begin Idle	End Idle	Departure
502A	5:00a.m.	5:45 a.m.	6:00 a.m.
504A	5:50 a.m.	6:35 a.m.	6:50 a.m.
506	6:20 a.m.	7:05 a.m.	7:20 a.m.
506A	6:40 a.m.	7:25 a.m.	7:40 a.m.

As a result of this schedule, the peak idling period will begin at 6:20 A.M. During this period, train #504A will idle for 15 minutes, #506 for 45 minutes, and #506A for 25 minutes for a total of 85 minutes of idling time.

An idle emission factor for the EMD 16-645E3C engine, used to power all the locomotives, currently being used by the MBTA and therefore, likely to see service on the Worcester Commuter Rail Extension, was provided by the *Electro-Motive Division of General Motors Corporation.*

The fleet of MBTA commuter rail locomotives consists of eighteen older F40-2 locomotives and thirty-seven newer F40-PHM2C and F40-2C locomotives. For purposes of this analysis, the significant difference is that the newer locomotives idle at a lower RPM during engine warm-up than older locomotives, and therefore produce lower levels of pollutant emissions. Each locomotive, regardless of type, is powered by a model 16-645E3C engine developed by the Electro-Motive Division of General Motors Corporation. This is an improvement to the older EMD 16-645-E3B engine, with emissions reduced by approximately 50 percent. The following are the idle emission factors for the newer E3C engine:

Pollutant	**Emission Factor**
Hydrocarbons (HC)	76 grams per hour
Carbon Monoxide (CO)	99 grams per hour
Oxides of Nitrogen (No_x)	999 grams per hour

This compares to an NO_x emission rate of 4707 grams per hour for the older F40-2 locomotives operating at the required higher idle condition. Assuming the existing mix of MBTA commuter rail locomotive types, this results in weighted NO_x idle emission rate of 2222 grams per hour.

In addition to the emissions from idling trains, there will be automotive emissions associated with the commuter parking lot at the site. Initially, the parking lot will serve the Interim Service commuters commencing in the Fall 1994. Ultimately, the parking will be a permanent feature of the layover/Worcester Station. A traffic analysis of the parking lot driveway intersection with Shrewsbury Street was performed, making appropriate adjustments to the unsignalized intersection in order to use the CINCH program for signalized intersections to predict queue lengths and traffic delays.

The two pollutants of primary concern relevant to the layover site are carbon monoxide and oxides of nitrogen. Carbon monoxide is a colorless, odorless gas produced through the incomplete combustion of organic fuels. When combined with the hemoglobin in the blood, it reduces the ability of blood to carry oxygen. Oxides of nitrogen represent a number of compounds produced during combustion. NO_2 is a brownish gas with a pungent odor. It is a pulmonary irritant and short exposures may increase susceptibility to acute respiratory disease.

An analysis of the impacts of the train and automotive emissions on the sensitive receptor site to the north of the layover site was performed using U.S. EPA's CAL3QHC modeling methodology to predict pollutant concentrations near roadway facilities. Automotive emission rates were generated using the EPA's Mobile 5a emission model. In applying the methodology to the layover facility, the individual locomotives were modeled as queuing links similar to the automobiles delayed at the intersection. The analysis was performed using worst-case assumptions regarding the location of the locomotives in relation to the receptor site. That is, the locomotive with the longest idle time during the peak idle hour (#506) was assumed to be located closest to the receptor on the northernmost track, #506A was assumed to be on the adjacent track, and #504A was assumed for the third track. The automotive emissions were analyzed for the 1996 A.M. peak hour traffic and for the maximum 8-hour average period. Because the apartment building is seven stories, pollutant levels were modeled at three elevations (2, 10, and 18 meters).

CAL3QHC produces results based on variations in wind direction. Logically, given the orientation of the layover facilities to the receptor site, a southerly wind direction produces the worst-case results in terms of predicted CO levels. Under conditions with a wind angle of 160 to 180 degrees (south-southeast to south), CO levels are predicted to increase by only 0.1 ppm due to the combination of train and automotive sources. With an estimated ambient background CO level of 3.0 ppm, the predicted 1-hour CO levels at the Apartments range from 4.7 ppm at the first floor level to 3.8 ppm at the third floor. The 8-hour levels, including a background of 2.0 ppm, range from 3.3 ppm at the first floor to 2.7 at the third floor. The sidewalk area between the Apartments and Shrewsbury Street would have 6.6 ppm for the 1-hour period and 4.7 ppm for the 8-hour period. When these are compared to the 1-hour standard of 35 ppm and the 8-hour standard of 9 ppm, no violations will occur.

The idle emission rate of the EMD 16-645E3C for NO_x is lower than for previous generations of locomotive engines. Assuming the existing mix of locomotive types, that the older type of locomotive always will be on the layover track located closest to the receptor, and given a total idle time between the three locomotives during the peak hour of 85 minutes, this results in emissions of 1.42 kilograms of NO_x within the 45 minute peak period.

Although not designed for the purpose of estimating NO_x levels, a second analysis was performed using CAL3QHC to analyze NO_x in the vicinity of the layover site. NO_x reacts with volatile organic carbons to form ozone. There is no separate health standard for NO_x. A standard, though, does exist for NO_2, and this is 0.05 ppm averaged over a one year period of time. Further, because of variations in the dispersion and reactivity characteristics between NO_x and CO, the results of the CAL3QHC procedure, which was designed to estimate CO levels, cannot be considered as a definitive estimation of NO_x

levels at the receptor site. The results of a CAL3QHC analysis, therefore, can be used only as a preliminary indicator. Assuming both worst-case south-southeasterly and southerly wind conditions and that the locomotive NO_x emissions are composed entirely of NO_2 emissions, this would result in a small increase of NO_2 levels at the apartment facility during the early morning hours but would not result in a violation of the NO_2 standard.

Given these findings, meteorological data were obtained from the Massachusetts Department of Environmental Protection to determine the likelihood of wind angle conditions which could produce these worst-case results. Winds in the Worcester area were observed to be primarily westerly during all four seasons. On an annual basis, winds out of the south and southeast occur with a frequency of less than eight percent, reducing the likelihood of undesirable pollutant levels at the receptor site.

6.3 Noise and Vibration

A layover facility can be a source of noise complaints because much of the activity of the layover facility takes place during nighttime and early morning hours. In addition, the frequency-related characteristics of the noise generated by certain layover operations have the potential of being more intrusive than normal train noise.

For the proposed layover facility in Worcester, most of the surrounding land use is industrial or commercial, save for one residential building and church located near the facility site. Noise impact criteria for both of these land uses are based on the proposed Federal Transit Administration (FTA) criteria for train operations as well as the Massachusetts Department of Environmental Protection (DEP) policy on pure-tone noise sources.

Noise Impacts from Layover Facility Operations

Our Lady of Mount Carmel Church and Mount Carmel Elderly Housing Apartments are located adjacent to the Shrewsbury Street I-290 exit ramp in downtown Worcester, approximately 300 ft from the centerline of the proposed Layover Facility. The existing L_{dn} measured at a location in the apartment building directly facing the facility was measured to be 76 dBA. (L_{dn}, or Day-Night Sound Level, is the descriptor for cumulative 24-hour noise exposure, with a 10-decibel penalty imposed on nighttime noise). The noise environment here is dominated primarily by traffic on I-290.

The noise impact criteria for this project applicable to layover facility operations are shown graphically in Figure 6.3-1. As shown in the figure, the criteria are based on comparison of the existing outdoor noise levels and the future outdoor noise levels from

the proposed project. These criteria were developed by FTA to recognize the heightened community annoyance caused by late-night or early-morning noise sources, and to respond to the varying sensitivity of communities to projects under different background noise conditions. The criteria use L_{dn} for residential land use or for other land uses where nighttime sensitivity to noise is a factor. For land use involving only daytime activities (e.g. churches, schools, libraries, parks) the impact is evaluated in terms of $L_{eq}(h)$, defined as the hourly equivalent sound level for the noisiest hour of the project during which human activities occur at the noise-sensitive location. Specific definitions of the land use categories indicated in Figure 6.3-1 are summarized as follows:

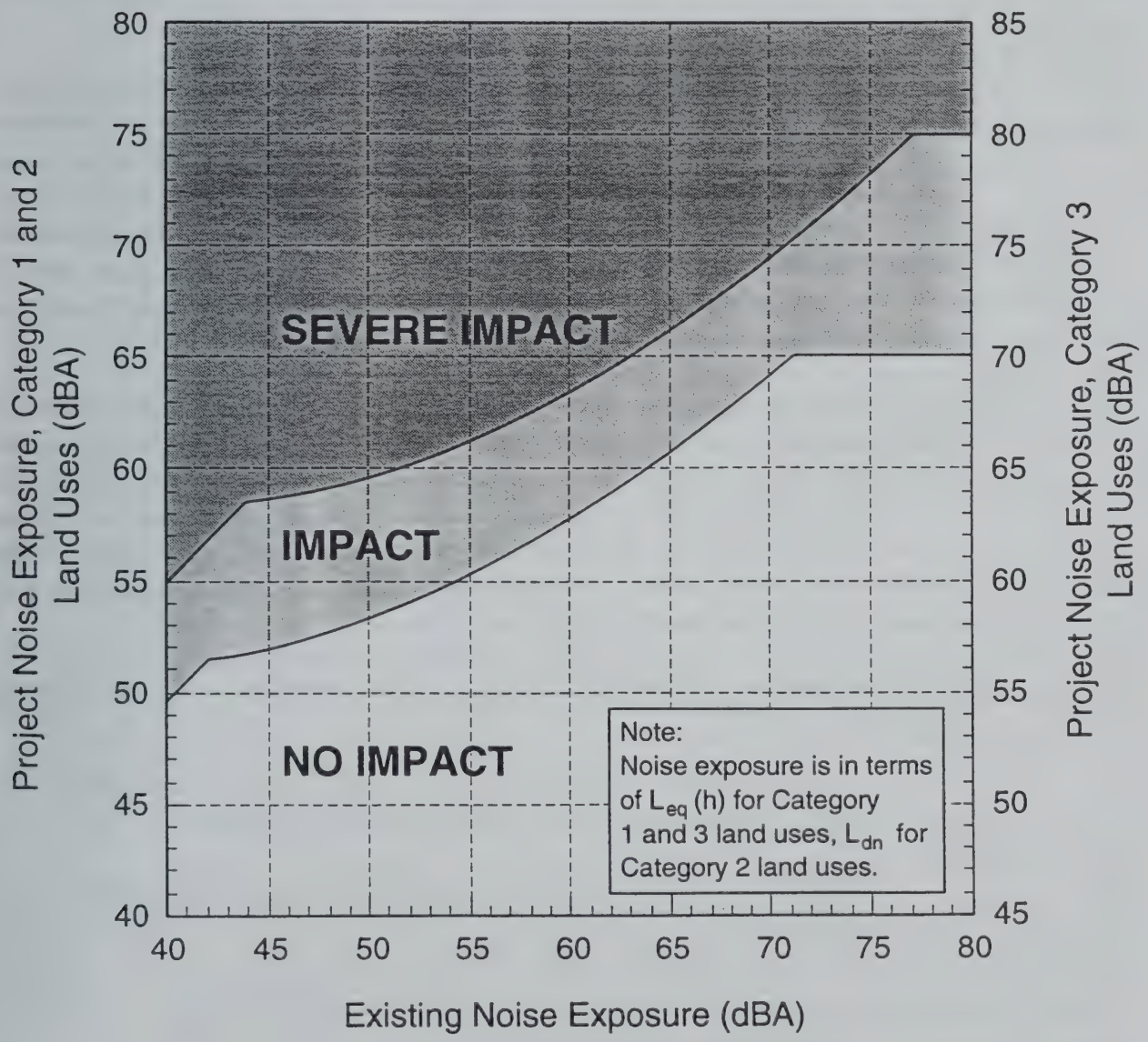


Figure 6.3-1 Noise Impact Criteria

Category 1 - Tracts of land where quiet is an essential element in their intended purposes, such as outdoor amphitheaters and concert pavilions.

Category 2 - Residences and buildings where people normally sleep, including homes, hospitals and hotels where nighttime sensitivity to noise is highest.

Category 3 - Institutional land uses with primarily daytime and evening use, including schools, libraries and places of worship where it is important to avoid interference with activities such as speech, meditation and concentration on reading material. All non-residential buildings with noise sensitivity are included in this category.

The curves defining the noise impact criteria in Figure 6.3-1 allow increasing project noise levels as existing noise increases up to a point, beyond which impact is determined based on project noise alone. Below the lower curve , the project is considered to have no noise impact. The curve defining the onset of noise impact stops increasing at 65 dBA for Category 1 and 2 land use, a standard limit for an acceptable living environment defined by a number of Federal agencies. Project noise above the upper curve is considered to cause "Severe" impact, and flattens out at 75 dBA for Category 1 and 2 land use, a level associated with an unacceptable living environment.

The shape of the curves correspond to a gradual decrease in the allowable increase in total noise level as existing noise levels increase. In other words, the criteria allow a noise exposure increase of 10 dBA if the existing noise environment is 42 dBA or less, but only a 1 dBA increase when the existing noise exposure is 70 dBA. In addition, as indicated by the right-hand scale on Figure 6.3-1, the project noise criteria are 5 decibels higher for Category 3 land uses since they are considered to be slightly less sensitive to noise than the types of land use defined by Categories 1 and 2.

The conditions for mitigation for this project are determined using the following guidelines:

- If the project noise level for the land use category lies within the FTA-defined "Severe Impact" zone, mitigation must be considered.
- If the project noise level for the land use category lies within the "Impact" zone, and
  - the project does not cause a 5 dBA or more increase in the existing noise exposure, then the site does not qualify for mitigation measures;

- the project causes a 5 dBA or more increase in the existing noise exposure, but the mitigation measures do not meet cost-benefit criteria for reasonableness, then the site does not qualify for noise mitigation; and
- the project causes a 5 dBA or more increase in the existing noise exposure, and cost-benefit criteria are met, then the site qualifies for noise mitigation.

According to Figure 6.3-1, the project noise level criteria corresponding to the existing ambient noise level of 76 dBA L_{dn} measured at the Mount Carmel apartment building are 65 dBA L_{dn} for onset of impact, and 74 dBA L_{dn} for onset of severe impact. In slightly different terms, the criteria for impact and severe impact limit the increase in the total noise level at this location to 0.5 dBA and 2 dBA, respectively. Because of the high existing noise environment, the allowable increase in noise level is very small.

Most of the community noise complaints related to layover facilities are caused by operations in the late night or early morning hours, particularly when locomotives are idling for extended periods of time. In extremely cold weather, locomotives are sometimes required to run overnight to avoid problems restarting the engines in the morning. However, the Worcester layover facility will be fully equipped with electrical plug-in power sources to maintain heat so that all-night idling will not be required. Locomotive engines will only be run long enough to warm them up in the morning before starting revenue service, and for a brief time during the evening before they are shut off.

While other sources of noise do exist in a layover facility, such as wheel squeal on short radius curves, train whistles used for signaling during switching operations, air discharge from brake release, substations, and PA systems, most complaints are related to the constant noise level generated by running engines. For this reason, the only layover facility noise source considered in the impact assessment was locomotive idling during off-service hours.

Measured data from actual operating MBTA locomotives were used to develop a noise model for the proposed layover facility. Noise measurements of idling diesel engine locomotives were conducted at the Boston Engine Terminal in 1993 and again in 1995 at North Station. The varying modes of operation during idling, as well as the different locomotive models, were monitored to determine noise source levels associated with the layover facility. It was found that noise levels varied depending on the model or age of the locomotive, and whether head-end power (also known as "hotel power") used for

interior lighting, heating, air conditioning, and ventilation was being provided by the locomotive engine.

All MBTA diesel locomotives are of the same basic General Motors F40 series, with the only variable being model number. For the older 1000-Series (model F40-2), the locomotive has only one engine to provide both main power and head-end power. Thus, in order for the engine to provide head-end power to the cars it must run at a high power setting (Notch 8) even while stationary. The newer 1025-Series and 1050-Series locomotives (models F40-PHM2C and F40-PH2C) are equipped with a separate auxiliary engine to provide head-end power. This enables the main engine to idle at low speed while the head-end power engine runs separately. These engine differences between the two locomotive models result in markedly higher noise levels generated by the 1000-Series locomotives during start-up conditions than their newer counterparts. During start-up, both locomotive models are operated to provide head-end power. As a result, the type of equipment stored at the layover facility is a key factor in determining the extent of noise impact. Table 6.3-1 below provides a summary of the measured noise levels of the two types of locomotives in varying modes of stationary operation.

Table 6.3-1 MBTA Locomotive Noise Levels during Idling

Type	Condition	L_{max} at 50 ft. (dBA)
New locomotives (F40-PH2C and F40-PHM2C)	1. Main engine @ idle, HEP† engine running at full speed	76 dBA
	2. Main engine @ idle, HEP engine off	72 dBA
	3. Main engine off, HEP engine running at full speed	74 dBA
Old locomotives (F40-2)	4. Engine at low power setting (Notch 2), no HEP	74 dBA
	5. Engine at high power setting (Notch 8), providing HEP	86 dBA

† HEP = Head-end power

Two scenarios were evaluated for the layover facility noise analysis, one representing a best-case condition in which all four locomotives to be stored were of the newer type, and the other representing a more typical, baseline scenario where one out of the four engines is of the older F40-2 type.

There are 55 locomotives in the current MBTA fleet, of which 18 are of the older 1000-Series. MBTA weekday operations require 45 locomotives in service. Twenty-six

new locomotives are to be brought into service in the near future, as additional commuter rail lines are brought into operation. As the older 1000-Series locomotives average 17 years in age, many of them likely will be retired within the next 10 years. Thus, over the planning horizon used in the analyses, a baseline scenario in which one of four locomotives at the layover is a 1000-Series represents a realistic typical condition.

To evaluate the noise exposure under the best-case scenario, the corresponding noise source level for the new locomotives operating under condition 1 of Table 6.3-1 (main engine idling, HEP engine at full speed) was assumed for all four trainsets stored at the facility. For the baseline scenario, condition 1 was used for the three new locomotives, while condition 5 (engine at Notch 8, HEP on) was assumed for the single old locomotive. In both cases, it was assumed that each train will idle at the facility early in the morning for 45 minutes following start-up of the engines for warmup and diagnostic test purposes. These start-up times will be staggered according to the scheduled departure of each train from Worcester Station, with 15 minutes allowed for travel from the layover to the station and boarding of passengers. During the evening, four trains will return to the layover, where the engines will idle for 30 minutes to undergo the necessary tests before they are turned off. They will then be plugged into power outlets for the duration of the night until they are started up again in the morning. They will not be required to idle continuously through the night, since the facility will be fully electrified.

The locomotive idling times assumed in the analysis are summarized in Table 6.3-2, and are the same for both the best-case and baseline scenarios. "Start" and "Stop" times listed indicate the duration over which the locomotive engines will be running while stationary on the layover tracks; this does not include travel time to and from the station.

Table 6.3-2 Assumed Locomotive Idling Procedure for Worcester Layover Facility

Service Period	Scheduled Departure/Arrival Time	Idling Time	
		Start	Stop
A.M. Departures	06:00	05:00	05:45
	06:50	05:50	06:35
	07:20	06:20	07:05
	07:40	06:40	07:25
P.M. Arrivals	18:05	18:20	18:50
	18:35	18:50	19:20
	19:50	20:05	20:35
	00:30	00:45	01:15

Note: 15 minute duration assumed between layover departure and Worcester station departure.

In addition to idling noise from stationary trains, trains moving between the layover tracks and the mainline track at the station as they are put into and out of service each day were also included in the noise analysis. In general, however, the trains speeds during these movements (15 mph or less) will be slow enough and pass-bys will be comparatively brief in duration that the noise levels from moving trains will be significantly lower than those of the idling stationary locomotives. Noise from these train movements, therefore, is not a major component of the overall noise exposure from layover facility operations.

The total noise exposure from layover facility operations was estimated based on measured noise source levels and operating assumptions. The results are summarized in Table 6.3-3 for the Mount Carmel Apartments for the two scenarios evaluated. It was found that this seven-story, multi-unit residential building would be exposed to an L_{dn} of 68 dBA from the layover facility under the baseline scenario, while the L_{dn} generated by the best-case condition would be 63 dBA. The latter case would not result in any noise impact according to the project criteria. The baseline scenario places this receiver in the "Impact" zone according to the project criteria, but below the "Severe Impact" threshold. Since the overall increase in Ldn is less than 5 dBA, however, this location does not qualify for noise mitigation measures.

Table 6.3-3 Noise Impact Assessment for Mount Carmel Apartments

Noise Component	Best-Case Scenario† (L_{dn})	Baseline Scenario†† (L_{dn})
Existing Noise	76 dBA	76 dBA
Idling Noise only	63 dBA	68 dBA
Train movements only	53 dBA	53 dBA
Total Layover Operations (Idling + Train movements)	**63 dBA**	**68 dBA**
Future Total (Layover + Existing)	76 dBA	77 dBA
Increase in total (Future - Existing)	< 0.5 dBA	1 dBA

† Assumes four F40-PH2C or F40-PHM2C locomotives to be stored overnight in layover facility.

†† Assumes three F40-PH2C or F40-PHM2C locomotives and one F40-2 locomotive to be stored overnight in layover facility.

Mitigation

Although the noise assessment has assumed as a minimum condition the availability of electrical power outlets for each of the trainsets stored at the Worcester facility to be plugged into, this is in fact a critical and necessary element of the baseline noise mitigation plan. Without such capacity, at least one engine would be required to idle all night, and in extremely cold temperatures it is likely that all four engines would need to

remain running throughout the night. Under those circumstances the noise exposure would increase dramatically, and one could expect an 8 to 10 dBA increase in the L_{dn} from layover facility operations at the Mount Carmel Apartments, resulting in a "Severe Impact" situation. Therefore, it is emphasized that electrical plug-in capacity is assured for the trainsets stored at this facility, and is a reliable means of controlling the noise exposure to the surrounding community to within an acceptable range.

Pure Tone Analysis

The annoyance caused by noise from idling locomotives often is heightened by the low frequency characteristics of locomotive noise. This occurs in the form of "pure tones," or peaks in the sound frequency spectrum at one or more discrete frequency bands, often in the 30 to 80 Hz range that can increase the community annoyance. There are two features of low frequency sound in this range that can cause problems: (1) sound waves at these frequencies propagate with distance with less attenuation than higher frequencies, and (2) they tend to penetrate exterior walls with much less attenuation than higher frequencies. Inside buildings, the result is an enhancement of the low frequency "throbbing" quality of locomotive noise. While the A-weighted sound level may appear to be low, experience has shown that sounds dominated by low frequency energy still causes annoyance. In addition, pure tones at specific frequencies in this range are likely to excite resonances in building components (floors, ceilings, windows), causing them to vibrate. This is sometimes mistakenly thought to be caused by ground-borne vibration and almost always is intrusive to occupants.

Within the MBTA locomotive fleet, there are variations in the frequency characteristics of idling noise. As shown in the octave band sound spectra of idling locomotives in Figure 6.3-2, the older F40-2 locomotive appears to exhibit a pronounced tone at 500 Hz, as compared with the newer F40-2C locomotive, which does not show a clear peak in any frequency band.

The DEP's definition of a "pure tone" (the peak exceeds each adjacent octave band sound pressure level by more than 3dB) would be applicable to the sound characteristics generated by the older F40-2 locomotives, and these locomotives would be considered in violation of the Massachusetts DEP noise policy. The frequency at which this tone occurs (500 Hz) is in the highly audible range, well above the low frequency range which can induce vibration of building components. Strictly speaking, the measured sound spectra of the newer F40-2C locomotives did not exhibit this same tonal quality and would not be considered in violation of the policy.

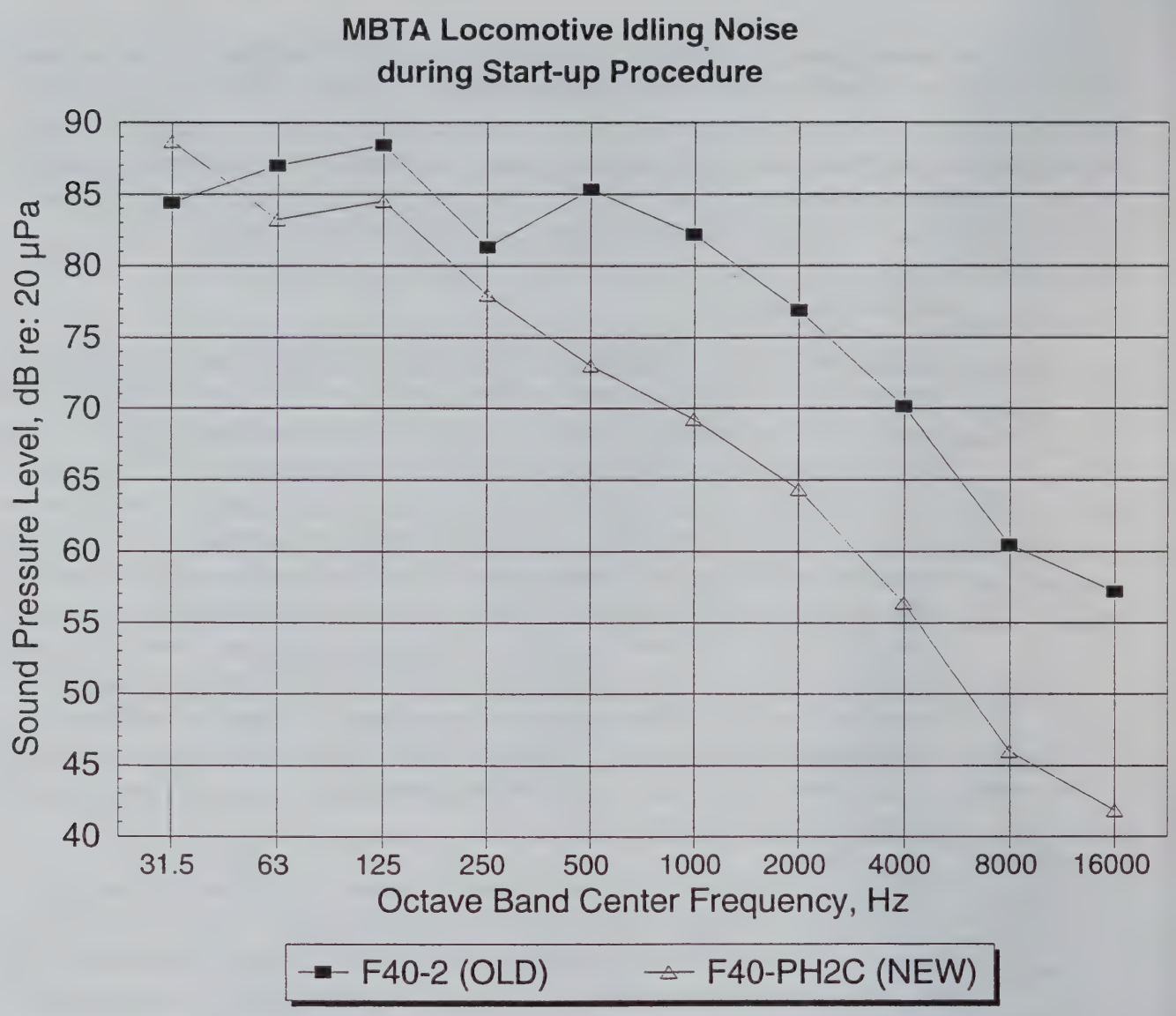


Figure 6.3-2 Octave Band Sound Spectra from Idling Locomotives

Construction Noise and Vibration

Construction of the layover facility is expected to include activities similar to those required for station construction, such as clearing, excavation, foundation work, equipment installation, paving and finishing. In addition, installation of new ballast and track as well as switching and signaling equipment will be required. Construction machinery is likely to include types of equipment typically used for light industrial construction, such as graders, bulldozers, backhoes, cranes and trucks. For trackwork, specialized equipment will be needed to handle ballast, ties and rails. Site grading and trackwork can likely be essentially completed in one construction season. Construction will typically occur during 8 to 10 hour weekday, daytime periods.

Construction noise exposure was estimated using equipment noise levels and scenarios that are typical for non-residential construction (EPA, 1971). Ground-borne vibration from construction was estimated based on equipment source data found in literature (Wiss, 1974; FHWA, 1982; FTA, 1990).

Noise

Noise impact criteria for construction are based on the outdoor AA L_{dn}, or Annual Average Day-Night Equivalent Sound Level, with a threshold of 65 dBA AA L_{dn} defining the noise impact zone. As stated previously, the L_{dn} is a 24-hour, energy-average noise level with a 10 dB penalty applied to noise occurring at night (10 pm to 7 am). The L_{dn} is considered appropriate because it is the noise metric adopted for the assessment of project train noise impact. For construction noise, the daily phase L_{dn}s are averaged over a one-year period based on durations and schedules to determine the AA L_{dn} at nearby noise-sensitive receivers.

Construction of the layover facility (and also of a typical passenger station) was divided into two sources: parking area construction and platform area construction (tracks, platforms, ramps and overpasses). The total duration of facility construction is about 12 months. Construction noise exposure was estimated using equipment noise levels and scenarios that are typical for non-residential construction, as well as specific duration and tasks related to the layover facility. Usage factors were assigned to each piece of equipment to determine a cumulative reference noise level to use in determining the width of the noise impact zone.

Equipment rosters for both parking lot and platform area construction are provided in Tables 6.3-4 and 6.3-5 respectively, along with full-power equipment noise emission levels at a reference distance of 50 feet, assumed utilization factors or duty cycles (i.e. the percentage of time during operating hours that the equipment operates under full power during each phase), and the resulting workday L_{eq} and annual average L_{dn} for each phase.

The combined parking lot and platform area construction noise results in a total AA L_{dn} of 79 dBA at 50 ft.

The impact zone for layover facility construction was determined by evaluating noise levels at sensitive receivers based on the AA L_{dn} at 50 ft; then, assuming the minimum sound attenuation rate, with noise levels decreasing by 6 decibels for each doubling of distance from the respective centers of construction (20log[distance]), the screening distance to an AA L_{dn} of 65 dBA was projected. For parking lot construction, this distance was estimated to be 160 ft., while the screening distance for platform area construction was found to be 200 ft. To be conservative, all distances are measured from the closest area of construction. They represent the maximum distances from the construction operations where noise impact is projected to occur for residences with an unobstructed view of the construction activities.

The results indicated little potential for noise impact from trackwork; however, sensitive receptors within about 200 ft of the closest area of facility construction could experience short-term noise impact due to construction of the layover facility. Mount Carmel Apartments, located about 250 ft. from the northern edge of the layover facility parking area, appears to be outside the noise impact zone.

Table 6.3-4 Noise Projections for Station Construction - Parking Lot Area

CONST. ACTIVITY	CONST. EQUIPMENT	EQUIP. NOISE LEVEL @ 50' (dBA)	ACTIVITY DURATION (Weeks)	EQUIP. USAGE (%)	PHASE AVG. WORKDAY Leq @ 50' (dBA)
Tree Clearing	Chain Saw	90	1	30	69
Stump Removal	Backhoe	85	1	4	56
Excavation/Earthwork	Bulldozer	80	3	40	65
Rough Grading	Compactor	80	1	40	61
	Dozer	80	1	40	61
Install Gravel Base	Dump Truck	88	1	40	69
	Dozer	80	1	40	61
Compact Base	Compactor	80	1	40	61
	Dozer	80	1	40	61
Install Utilities	Backhoe	85	7	16	70
	Trucks	88	7	32	76
Saw Cut/Match Existing Pavement	Saw	90	1	8	64
	Backhoe	85	1	16	62
Fine Grading and Compaction	Truck	88	1	40	69
	Grader	85	1	20	63
	Compactor	80	1	40	61
Paving	Paver	89	1	50	71
	Roller	80	1	50	62
Install Curbing	Truck	88	2	32	71
	Backhoe	85	2	16	65
Install Amenities (Light Poles, etc.)	Truck	88	2	32	71
	Backhoe	85	2	16	65
AVERAGE WORKDAY Leq FOR CONSTRUCTION PHASE AT 50 FT:					81
AVERAGE WORKDAY Ldn FOR CONSTRUCTION PHASE AT 50 FT:					76
ANNUAL AVERAGE Ldn FOR CONSTRUCTION PHASE AT 50 FT:					75

Table 6.3-5 Noise Projections for Station Construction - Platform/Track Area

CONST. ACTIVITY	CONST. EQUIPMENT	EQUIP. NOISE LEVEL @ 50' (dBA)	ACTIVITY DURATION (Weeks)	EQUIP. USAGE (%)	PHASE AVG. WORKDAY Leq @ 50' (dBA)
Install New Ballast	Equalizer	82	4	30	67
	Tamper	83	4	30	68
Install New Ties	Tie Cutter	84	4	30	69
	Handler	80	4	30	65
	Inserter	85	4	30	70
Install New Tracks	Spike Driver	77	4	30	62
Install Switches, Signals, etc.	Truck	88	4	10	69
Trench Excavation for Footings	Backhoe	85	2	16	65
	Truck	88	2	40	72
Rock Excavation	Ripper	98	2	4	72
Install Gravel Base and Compact	Dump Truck	88	1	40	69
	Compactor	80	1	40	61
Formwork and Steel Reinforcing	Truck	88	3	40	73
Place Concrete	Concrete Mixer	85	2	40	69
	Vibrator	76	2	10	54
Install Precast Platform Panels	Crane	83	2	32	66
Install Pedestrian Overpass/Bridge	Crane	83	8	32	72
	Air Compressor	81	8	200	78
Install Amenities (Canopy, etc.)	Truck	88	4	16	71
	Air Compressor	81	4	80	71
	Impact Wrench	85	4	5	63
AVERAGE WORKDAY Leq FOR CONSTRUCTION PHASE AT 50 FT:					83
AVERAGE WORKDAY Ldn FOR CONSTRUCTION PHASE AT 50 FT:					79
ANNUAL AVERAGE Ldn FOR CONSTRUCTION PHASE AT 50 FT:					77

Vibration

The vibration criteria for building occupant annoyance and building damage from construction are consistent with the absolute criteria used in assessing vibration impact from moving trains (see Section 4.3).

Vibration projections were made for two construction equipment categories, based on the relative amount of energy imparted to the ground. These source levels cover the range of ground vibration likely to be generated during layover construction.

1. **Light-Duty Equipment**: This category includes equipment that is expected to be used for trackwork, including undercutters, small earth-moving equipment, and specialized rail maintenance equipment. A vibration velocity level of 70 V_{dB} at 25 ft has been chosen as the source level for these types of equipment and activities.

2. **Heavy-Duty Equipment**: This category includes heavy trucks and large earth-moving equipment that are expected to be used for layover facility construction. A vibration velocity level of 85 V_{dB} at 25 ft has been chosen as the source level for these types of equipment and activities.

Estimates of construction vibration propagation at distances other than 25 ft were made based on ground vibration propagation data measured along various other rail corridors. These measurements indicated vibration attenuations of 6 V_{dB} per distance doubling within 50 ft., 9 V_{dB} per distance doubling between 50 ft. and 100 ft., and beyond 100 ft., 12 V_{dB} per distance doubling.

The limiting distance for vibration impact for residences was found to be about 85 feet for construction of the layover facility. This is primarily caused by general construction activity, with actual trackwork having minimal effect on the resulting vibration levels. The only sensitive receptors in the vicinity (Our Lady of Mount Carmel Church and Mount Carmel Apartments) do not fall within this impact distance.

Layover Operations Noise Mitigation

The proposed layover design includes construction of an electrical substation to provide the necessary power to maintain locomotive engine heat overnight, thereby eliminating overnight idling. (Provision of this amenity at the temporary layover eliminated noise complaints occurring there.)

The analyses presented determined that locomotive idling during the mandatory warm-up and shutdown procedures in the layover will not result in significant noise impact, and no mitigation is proposed.

Layover Construction Noise and Vibration Mitigation

As described in previous text, no significant impacts were identified from construction activities for the layover facility. No site-specific mitigation plan is necessary.

Section 1.07 of the Standard Specifications used by the MBTA for construction contracts include noise control measures as follows:

"Use every effort and every means possible to minimize noises caused by construction operations, which the Engineer may consider as objectionable. Provide working machinery and equipment designed to operate with the least possible noise, and when gearing is used, such gearing shall be of a type designed to reduce noise to a minimum. Equip compressors with silencers on intake lines. Equip gas or oil operated equipment with silencers or mufflers on intake and exhaust lines. Wherever practicable, electricity shall be used for power to reduce noise. Dumping bins, hoppers, and trucks used for disposal of excavated materials shall be lined with wood or other sound-deadening material if required. Where required by agencies having jurisdiction, certain noise-producing work may have to be performed during specified periods only."

No construction related vibration impact was identified for the layover facility and no mitigation is required.

6.4 Site Drainage

The proposed layover facility site lies within the Blackstone River watershed, just north of the Conrail yard at Mile Post 43.5. The site area has irregular topography, overgrown with vegetation and had previously included portions of an existing automobile storage yard and railroad siding. The westerly end of the layover site includes portions of the parking area for the recently constructed Interim Station.

The proposed layover site drains generally in a northeasterly direction towards existing public works maintenance facilities owned and operated by the City of Worcester. The westerly end of the site drains in a northwesterly direction towards the Washington Square end of Shrewsbury Street. Due to the irregular topography, portions of the site currently retain and infiltrate some stormwater runoff.

The proposed layover facility will consist of new railroad tracks, designed to accommodate four 9-car train sets, internal access driveways, an electrical substation, a 30 foot by 50 foot maintenance building, a compressor house, fencing, lighting, hydrants and an employee parking lot. The proposed drainage system will include catch basins

equipped with sumps and oil and grease traps. These basins will collect stormwater from all new pavement areas within the facility and will connect into existing City of Worcester stormdrain systems. Other unpaved areas within the site will be graded and vegetated to match existing site conditions and no increase in peak flows will occur at the site discharge points.

A separate collection system will be constructed at the western-most portion of the layover facility, where locomotives will normally be stored. This system will consist of oil drip pans (to be located directly under the areas where the locomotives will be parked) connected to a 1,500 gallon oil separator. The oil separator will include a series of baffles and other elements to maximize the separation of stormwater from oils, greases and fuels, access manholes, venting piping and a sensor pipe. The oils, greases, and fuels will rise to the top of the separator where they can be easily pumped out, on a routine maintenance program as well as from any accidental spills, and legally disposed of. Stormwater outflow from the separator will connect into the City of Worcester sanitary sewer system.

The proposed drainage design drawings and engineering calculations have been submitted to the City of Worcester Department of Public Works and review comments will be incorporated into the final contract documents.

6.5 Hazardous Materials

An environmental site evaluation was performed for the proposed Layover Facility and Interim Station site. The purpose of the evaluation was to determine whether hazardous material or oil may be contained in the soils or groundwater at the site, within the meaning of Massachusetts General Laws, Chapter 21E ("21E"). The purpose of 21E and its implementing regulations (310 CMR 40.00 - The Massachusetts Contingency Plan) is to "ensure the protection of health, safety, public welfare, and the environment by establishing requirements and procedures for the discovery, notification, assessment of, and response to, releases and threats of releases of oil or hazardous materials, and by identifying these oils and hazardous materials which are subject to these requirements and proceedings."

The environmental site evaluation consisted of the following elements:

1. A review of the site's history which indicated that, since 1892, the majority of the site has been used as a railroad yard with various railroad sidings. Other uses of the site and adjacent areas have included woodworking shops, lumber storage yard, a stone cutting and supply

facility, a wholesale beef company, a used car lot, carpenter shop, paint shop, and plumbing supply shop. More recent uses include an automobile storage yard and the Amtrak railroad station with associated roads and parking areas.

2. A review of state and local records which indicated no record of spills or releases of hazardous materials or oil at the site. Even though the DEP "List of Confirmed Disposal Sites and Locations to be Investigated" did not include the project site, two sites within ¼ mile of the project site were listed:

   - Pat's Service Station, located adjacent to the northwest corner and cross-gradient of the project site, is listed as a confirmed site.

   - White and Bagley, located approximately ¼ mile west and down-gradient of the project site, is listed as a "Location to be Investigated".

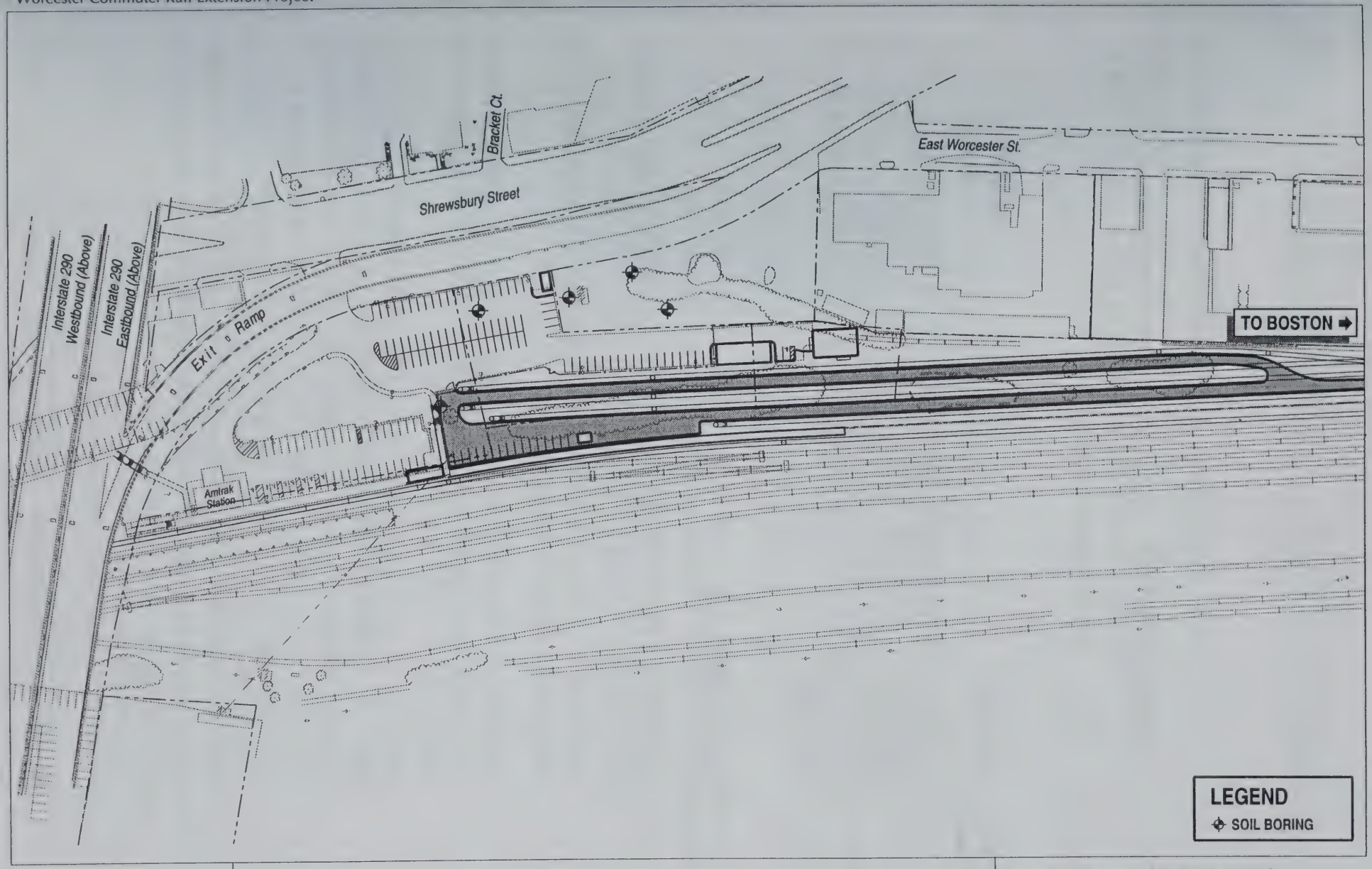
3. A subsurface exploration program which consisted of five soil borings and the installation of five monitoring wells. (A geotechnical engineering evaluation consisting of twelve additional soil borings was also performed). Figure 6.5-1 shows the location of the soil borings and wells. The soil boring logs are available at the MBTA project office.

4. Soil and groundwater samples were analyzed in a laboratory by chemical screening methods, which were used to identify and measure relative levels of volatile organic compounds (VOCs).

The results of the environmental site evaluation do not indicate the presence of oil or hazardous materials in the soil or groundwater at the project site other than trace levels of tetrachloroethene detected in the one of the five groundwater samples. More specifically, the environmental site evaluation indicated the following:

- Total volatile organic compound (VOC) concentrations ranged from none to 1.0 parts per million in the 27 soil samples. These concentrations are considered representative of background levels in urban areas.

- None of the 23 common VOCs were detected in the five groundwater samples taken with the exception of trace levels (15 parts per billion) of tetrachloroethene detected in one of the samples. This level is below the reportable concentration levels for groundwater category 2 listed at 3,000 parts per billion in the MCP.



Massachusetts Bay Transportation Authority

Approx. Scale: 1" = 150'

0 150

SITE PLAN - HAZARDOUS MATERIALS INVESTIGATION (21E) WORCESTER, MA

FIGURE 6.5-1

- Results of the pH and specific conductance screening analyses indicated that the pH ranged from 5.9 to 6.2, typical for New England groundwater. The specific conductance levels are slightly elevated but these are assumed to be attributed to the application of road salt to the surrounding streets and parking areas.

6.6 Construction

Construction of the layover facility will result in short-term impacts, primarily vehicular traffic delivering construction materials, temporary noise increases and dust from construction activities. Most of the construction related to trackwork will have no off-site impacts, in that materials and specialized equipment needed will access the site via existing tracks.

6.7 Proposed Mitigation

Dust from construction activity will be minimized by an effective program of spraying water on exposed earth surfaces subject to vehicular traffic.

Hay bale and silt fence barriers will be employed to minimize the effects of erosion and sedimentation resulting from stormwater runoff.

Section 1.07 of the Standard Specifications used by the MBTA for construction projects includes noise control measures that will be adequate to ensure that no significant noise impact results from construction of the layover facility.

At Our Lady of Mount Carmel Church and Mount Carmel Apartments, the project would result in an increase in Ldn of 1 dBA or less. The layover site design includes provision for electrical power for the locomotive engines during shutdown periods and overnight idling of engines will not be necessary. Since the overall noise level increase is well below the 5 dBA increase criterion for significant impact, no additional mitigation is proposed. The layover also includes installation of an air compressor to maintain air brake pressure overnight, which will allow for reducing morning idle time by up to ten minutes for each locomotive. This additional benefit was not considered in the noise analyses.

SECTION 7.0 RESPONSE TO COMMENTS

Introduction

Comments on the November 1994 DEIR were received from 99 different sources. The Certificate of the Secretary of Environmental Affairs, dated March 16, 1995, has been designated as comment letter No. 1. The individual comments within each comment letter have been numbered, i.e., comment No. 13 in letter No. 2 is called comment 2-13. All comment letters are listed in the Appendix at the end of this section. All comment letters with their numbered comments will be printed as an Appendix to the second FEIR which will cover Stations and Railroad Operations.

This FEIR, which covers the Railroad Right-of-Way and Layover Facility, has relatively few comments specific to the subject matter. The comment letters are included in the Appendix at the end of this section. The following list of individual comments, which are quoted from the comment letter and carry the numbering system described above, are followed by the response to the comment. When appropriate, the reader is directed to the applicable section of the FEIR.

7.1 Response to Comments

Comment Letter No. 1

Secretary of Environmental Affairs Certificate (3/16/95)

Comment #1-13

"Because of expected noise, vibration, odor, and air quality impacts, layover facility siting avoids residential areas, wherever possible. However, there is an elderly housing complex, the Mt. Carmel Apartments, located on the north side of Shrewsbury Street, within 300 feet of the centerline of the layover facility. The DEIR predicted that these apartments may be exposed to an Ldn of 70 dBA under worst case conditions. However, no noise mitigation is planned, because the report indicates that mitigation is only necessary when noise impacts reach or exceed 74 dBA Ldn. This conclusion should be

explained in terms of ambient noise levels, the applicable noise impact criteria used to draw this conclusion, and the location where the noise impact was measured."

Response:

Ambient noise levels, measurement site location, and noise impact criteria are discussed fully in Section 6.3 of the Final EIR.

Comment #1-14

"Reducing train idling time is an effective way to limit locomotive noise impacts. The MBTA has minimal ability, however, to control idling in cold weather. Consequently, this mitigation measure would be unreliable. Electric power sources provide an alternative way to control idling noise. However, the report provides no assurance that this alternative source of power will be used for this purpose. Additional discussion of this issue should be provided in the FEIR to better understand existing applications, the potential effectiveness in controlling auxiliary engine noise and the degree of noise attenuation that could be achieved at sensitive receptors, such as the elderly housing complex."

Response:

The layover facility will be equipped with electrical power supply to maintain heat overnight. Idling of locomotive engines, either main or auxiliary, will not be necessary except during the required start-up and shut-down periods. See Section 6.3 for full discussion of layover operations.

Comment #1-15

"The results of the pure tone analysis indicate that the DEP guideline, i.e. the peak exceeds each adjacent octave band sound pressure level by more than 3 dB, will be exceeded for the older 1000-series locomotives. The MBTA is purchasing new locomotives, i.e. 1050 series, which will not have as great an impact, but the phase out of the older locomotives is unspecified. Therefore, the FEIR should consider the frequency of use of the noisier locomotives at initiation of service and long-term to more accurately forecast pure-tone exceedances."

Response:

The discussion of noise at the layover (in Section 6.3) describes the probability of older locomotives laying over and the relative effects on noise environment. While the 1000-Series locomotives currently represent about one third of the MBTA fleet, the pending addition of 26 new locomotives will result in 1,000 series being less than one fourth of

the total. Further, the average age of the 1000-Series locomotives is 17 years, and retirement from service can reasonably be anticipated within ten years for many of these units.

Comment #1-16

"The FEIR should consider the feasibility of operating only newer train sets"

Response:

The 1000-Series locomotives are 17 years old and had their mid-life rebuild at approximately 12 years. Between their age and the addition of new locomotives, their percentage of use in the fleet will continue to decline. Due to scheduling and service requirements, no guarantees can be made with respect to limiting the use of the older locomotives to Worcester.

Comment #1-17

"The site plan of the layover facility, Figure 9.0-1, also shows that the site is being used as an interim station with platforms, a passenger drop-off area, and a 177 parking space lot. The FEIR should explain what will happen to the station facilities after Union Station is developed."

Response:

Upon completion of the Union Station project, the only portions of the Interim Station which are anticipated to be removed are the access platform and canopies. All other facilities including parking lots, lighting, stairways, sidewalks, and landscaping will remain and serve Union Station as supplemental parking facilities. Existing signing will be replaced as required. The MBTA will coordinate with the Worcester Redevelopment Authority during transition to Union Station.

Comment #1-18

"...the FEIR should include any plans for future remodeling of the layover facility after Union Station is complete."

Response:

No future remodeling plans of the layover facility are anticipated after Union Station is complete, with the possible exception of redesignating additional employee parking areas for Layover personnel, if required.

Comment #1-19

"The FEIR should also specify the noise mitigation measures that will be undertaken during construction of the layover facility. Those described in the DEIR (p. 9-10) seem appropriate, but no commitments have been made."

Response:

No significant noise impacts were identified from construction activities for the Layover facility. Section 1.07 of the Standard Specifications used by the MBTA for construction contracts includes noise control measures, which are described in Section 6.3 of the FEIR. These measures will be employed and will minimize construction noise effectively.

Comment #1-20

"As a result of the addition of a double track along a seven mile segment from Westborough to Worcester, there will probably be additional drainage, wetlands, wildlife, and archaeological resource impacts. The rail embankment widening and fencing will cause impacts too. However, the DEIR indicates that the areas of new disturbances will not be identified until final design. This raises the concern that the public review may not disclose the extent of the project-related impacts to the natural environment because the FEIR is due at about the 60 percent design stage. To the extent possible, these impacts should be described fully in the FEIR and the report should demonstrate that an effort was made to avoid and minimize damage to resource areas."

Response:

Drainage, wetlands, and wildlife impacts along the seven mile segment are described fully in sections 4.4 through 4.7 of the FEIR and indicate little or no impacts associated with construction of the 7 mile segment. In addition, Notices of Intent have been filed with the Conservation Commission in each of the individual towns along the project corridor and the review process will in general occur concurrently with the FEIR review process.

Comment #1-21

"The same level of impact analysis should be provided for the inadequate bridges which will be reconfigured. (the Pine Street Bridge in Grafton, and the Route 85 bridge in Southborough)."

Response:

The replacement of the Pine Street Bridge in Grafton is a Massachusetts Highway Department (MHD) project for which the MHD is responsible for any impact analysis and possible mitigation. The Route 85 railroad bridge in Southborough is part of this project. Potential impacts will be primarily during construction and are addressed in Sections 4.1 and 4.3.

Comment #1-22

"I note that the CAC and the MAPC have raised a variety of questions relating to bridge reconstruction and lowering of the rail line for double-stacked trains that should be addressed in the FEIR."

Response:

The improved vertical clearance of 21 feet to provide for passage of Conrail's double stack containers is an EOTC program. Although not necessary for commuter rail operation, a feature of the seven mile track replacement between MP 33.2 and MP 40.3 will be the provision of the 21 foot clearance at the Shrewsbury Street Bridge in Grafton. Otherwise, no track lowering or bridge raising will be included in this project.

Comment #1-27

"The DEIR includes an inventory of the expected train vibration impact (Table 7.3-4) to 41 residences. After reviewing the vibration mitigation options, the DEIR concludes that about 4,650 feet of ballast mats would be needed to reduce the impact entirely. The report concludes that it may not be cost effective to protect only a few houses, however. Moreover, mats may not be as effective in areas where the vibration is due to low frequency components. The FEIR should clarify the vibration mitigation plan based on further assessment of the areas of impact."

Response:

Additional site measurements of vibration have been performed in Westborough, Ashland, and Grafton, to supplement previous data obtained in 1993. The revised vibration impact analyses have been overlain on 1" = 200' scale maps of the rail corridor to determine more accurately potentially impacted residences. (See Section 4.3.)

Comment #1-28

"The DEIR has also recommended a complete architectural survey; however, the recommendations for the work on historical bridge structures remain unclear. This should be addressed in the FEIR."

Response:

The survey of 26 bridges was performed and the appropriate forms submitted to the Massachusetts Historical Commission (MHC). The 15 railroad bridges, with the exception of the Route 85 bridge in Southborough, have been structurally rated and will not require any work under this project. The 11 highway bridges are under the control of the MHD.

Comment #1-29

"I concur with the suggestions of the Massachusetts Historical Commission (MHC) as to how and when to proceed with surveys and more advanced investigations, and what information should be provided in the FEIR."

Response:

The permit application for an intensive archaeological survey was submitted to the MHC and approved in July 1995. The survey is underway along the railroad right-of-way in the seven mile stretch where excavation of undisturbed ground is anticipated for the installation of a replacement second track. If the results of the survey indicate areas of possible intact archaeological sites, an evaluation will be performed to determine the value of the site. As appropriate, a mitigation plan will be developed prior to construction activities.

Comment #1-30

"The FEIR should provide more detailed information about the required culvert repair work and any new drainage outlets which will result in wetlands impacts."

Response:

Culvert repair and new drainage outlets are described in Section 4.4 - Right-of-Way Drainage. In summary, three culverts have been proposed for repair or alteration and one new culvert is proposed.

Comment #1-31

"Commitments to the maintenance of the storm drainage system should also be made in the FEIR."

Response:

The railroad is, and will continue to be, owned and operated by the Consolidated Railroad Corporation (Conrail). Maintenance of the railroad includes rail "trueing," tie replacement, ballast replacement, and cleaning of drainage systems.

Comment #1-32

"What specified measures are needed for the oil drip pans and separators, such as those described for the layover facility (p. 9-11)? Although the description of the systems appears to suggest that these may not be the typical oil separators, the degree of effectiveness has not been predicted."

Response:

The oil-water separator at the Worcester layover facility will be a stand-alone system separate from the storm drainage system. Oil drip plans will be sized to capture oils, grease or fuel from the locomotive which will be always parked at the west end of the layover track. The oil separator will be sized to handle a complete failure of a locomotive diesel tank with an alarm system for high oil level which can be pumped out for proper disposal. The equipment specified will meet all state and federal oil and grease limitations under the new Pollutant Discharge Elimination Systems Regulations for Storm Water Discharges.

Comment Letter No. 2

Citizens Advisory Committee (11/9/94)

Comment #2-12

"The work planned for this Extension should in no way preclude the electrification of this line. In fact, electrification should be a goal."

Response:

The proposed project does not eliminate the possibility of electrification of the line, although the freight usage, which could require a vertical clearance of 21 feet, would require a catenary system that would require a significant amount of track lowering or bridge raising to provide the desired freight clearance.

Comment #2-24

"The DEIR does not indicate how many bridges and underpasses east of Framingham have to be rebuilt. If Framingham is as far east as the double stacked cars will be able to go, how does that make the Port of Boston intermodal? Why are we analyzing the cost of double stacking and raising bridges west of Framingham if this DEIR states that the line will only be double stack to Boston? Is not the goal to double stack rail lines to Worcester?"

Response:

The DEIR addressed the double stack container clearance issue only to identify it as a project with some impact on the Worcester Commuter Rail Project. The double stack project is under the direction of EOTC and will be implemented and funded separately from the MBTA project.

Conrail has identified to EOTC the bridges requiring clearance improvements. Within the area where the MBTA will be restoring the second track, there are four bridges at issue. Three of these locations will be handled by MHD. At the fourth, Shrewsbury Street, the MBTA will provide the 21-foot clearance as incidental to the installation of the second track, track realignments and drainage work in the area. The MBTA will coordinate with EOTC on this clearance project to minimize future impacts to their commuter service from clearance construction once Basic Service begins.

Comment #2-32

"The MBTA is proposing to lower tracks along the corridor to provide the capability for double-stack freight service in the corridor. The work is described as 'not necessary for the Worcester Extension, but would eliminate future service disturbances if EOTC moves ahead now with its double-stack plans.' EOTC's original double-stack plans were for the northern tier tracks used by the Fitchburg Commuter Rail service, and was designed to meet the re-use needs of Fort Devens. Conrail and others objected to this being included in the Transportation Bond Bill. The MBTA should not pay the cost of lowering tracks or raising bridges as part of this project. The DEIR states that this cost will be subsidized by the EOTC, however the financial section does not itemize this cost in a means that is identifiable."

Response:

See response to Comment #2-24. Note that the MBTA is not lowering track or raising bridges to obtain the desired freight clearance.

Comment #2-33

" 'Approximate train schedules...' The proposed Basic Service schedule fails for a number of reasons:

1. Assuming four sets of equipment based in Worcester, trains 502A, 504A, 506, and 506A must be covered by trains based in Worcester because the first westbound (505) does not reach Worcester until 30 minutes after the departure of the fourth departure from Worcester.

2. Assuming that 505 turns for 510, the schedule needs adjustment because 510 cannot depart at the same time 505 is arriving. A minimum of 10 minutes must be allowed to detrain and entrain passengers, task the crews to change ends, contact the dispatcher and make the legally mandated brake test before departure of 510.

3. Following this logic, 509 must turn for 514. The equipment would sit idle in Worcester. Train 513 would turn for 518 and, again, would sit in Worcester for one hour.

4. Train 520A is scheduled for a 5:20 PM departure from Worcester. Unfortunately, there won't be a train set in Worcester until 5:35 PM, when 515A arrives.

5. Assuming the problem with 520A is a schedule glitch and 520A really will have equipment to run with, then the afternoon rush hour trains will start arriving. Train 519 and 521 will put their equipment away in Worcester because there is no schedule for them to return east.

6. Train 521A will turn for 526.Train 523 must turn for 530 using the proposed schedule with a layover of one hour fifty minutes. More than likely, 523 will put away in Worcester and the schedules of 527 and 530 will be corrected to allow 527 to turn for 530. Train 531 would be fourth set put away in Worcester at night.

7. Train 505 will have to turn for 512 after sitting in Worcester for an hour and ten minutes. In fact 507 will have arrived before 512 leaves and two sets will be sitting in Worcester. Train 507's equipment will have a two and one-half hour layover waiting for 514's schedule. This is problematic from both equipment and crew scheduling perspectives.

Some may suggest shutting down the train set while it sits in Worcester. This is unlikely to occur because of the required time and tests that must be made after a set is restarted. Further, where does the crew wait during the layover? Moving the equipment to the layover facility would work, but by the time the necessary switching moves were made, it would almost be time to board passengers. These scheduling problems must be addressed in the FEIR."

Response:

The approximate train schedules shown in Section 3.3 have been adjusted since the November 1994 DEIR to provide generally about a 15 minute layover for turn-around movements. Under Basic Service, a late train from Boston has been added to be the fourth layover train for morning service.

Comment #2-67

"CAC requires additional information in the FEIR regarding noise impacts at the Layover Facility. The assumptions outlined in the first full paragraph on page 9-7 created confusion for many CAC members. It would seem impossible to start a locomotive up, run all of the required tests, move the equipment from the layover facility to the originating station, board passengers and depart in 45 minutes - at least not at the Worcester location because of the make-up of the operation. Trains do not go into service from the layover facility. They move to their originating station and sit there idling while commuters board. The paragraph is misleading. FEIR must clarify this issue."

Response:

Start-up time plus travel to the station and boarding passengers will require one hour of time. The noise impact analysis has been significantly revised, as presented in Section 6.3. The issues raised in this comment have been addressed therein.

Comment #2-68

"Due to the scheduling inaccuracies indicated, the FEIR should consider the likelihood of as many as three or more engine sets idling simultaneously over longer periods. Peak generation of noise is actually greater than the DEIR indicates. We ask that re-projections of noise and emissions be recalculated.

Response:

The noise impact analysis has been significantly revised, as presented in Section 6.3. The issues raised in this comment have been addressed therein.

Comment #2-69

"The argument has been made that only F40PH-C units will be sent to Worcester to mitigate the noise problem. However, the second day of Interim Service saw the introduction of the F40PH to Worcester. The third day saw the noise complaints on the front page of the Worcester paper, complete with pictures. This must be resolved in the FEIR."

Response:

The MBTA installed electrical power at the temporary layover to mitigate the cited complaints. The permanent layover design includes the necessary electrical power to eliminate any overnight locomotive idling, as described in Section 6.3.

Comment #2-70

"CAC requests that noise mitigation take place or the facility will simply become the subject of unending complaints."

Response:

The required mitigation is part of the layover facility design. Provision of electrical plug-in power eliminates the need for overnight idling of the locomotive engines; therefore, noise impact effectively will be eliminated.

Comment Letter No. 8

Massachusetts Department of Environmental Protection Central Regional Office (3/9/95).

Comment #8-3

"Plans for the Worcester layover facility include maintenance, storage, office space and sanitary facilities for all employees. Will this facility receive its potable water from the City of Worcester? Can the water system for the City of Worcester meet the demand (drinking, maintenance use, sanitation, fire protection) required for the facility? Have any agreements been made at this time? If connection to a public water system is planned, cross connection control devices must be implemented where necessary."

Response:

The layover facility will receive its potable water from the City of Worcester. The design drawings have been reviewed by the City and their comments will be incorporated into the Final Contract Documents, including installation of backflow preventatives (cross connection control devices) in the proposed water system.

Comment #8-4

"Provide information in regard to the number of years and frequency with which herbicides have been applied along this segment of the rail. Which herbicides have been used in the past and which are being proposed for use in the future? Will herbicides be applied more frequently as a result of this project?"

Response:

The frequency, type, and amount of herbicide application have a history that likely covers a timeframe of about 150 years. Current and future vegetation management is and will be in accordance with Conrail's five-year Vegetation Management Plan (VMP), in accordance with DFA regulations. The proposed commuter rail project will not result in or require more frequent application of herbicides.

Comment #8-5

"Conrail currently manages herbicide use. It is stated in the DEIR that Conrail has an approved Vegetative Management Plan (VMP) from the Department of Food and Agriculture (DFA). Will Conrail assume the responsibility of vegetation management and herbicide application in the future?"

Response:

Conrail owns and maintains the railroad between Worcester and Framingham and will continue to do so. All future vegetation management and herbicide application will be Conrail's responsibility.

Comment Letter No. 11

Massachusetts Audubon Society (3/8/95)

Comment #11-1

"Proposed wetland impacts have been reduced significantly since publication of the Environmental Notification Form (ENF) in 1992. Most notably, the proposed location of the Grafton station has been moved away from a previously proposed site that would have involved considerable wetland filling. The Final EIRs for the track improvements and individual stations should provide additional detail showing that all feasible attempts have been made to avoid and reduce impacts to wetland resource areas and buffer zones, and that impacts to wetland resource values have been fully mitigated."

Response:

As described in Section 4.5 Wetlands, proposed work along the railroad right-of-way has been designed with an emphasis on avoiding and minimizing impacts to wetland resource areas. These efforts include, but are not limited to, installation of ballast retaining walls to be placed in areas where a widened railbed embankment is proposed adjacent to a wetland resource.

Comment #11-2

"The Society believes it is important to clarify, however, that the concern raised in our ENF comments regarding fencing as a barrier to wildlife movements and habitat utilization was not restricted to large mammals such as deer or moose, or to large scale herd movements, as discussed in the DEIR. Rather, Massachusetts Audubon was concerned about the fragmentation of habitat for numerous species that would occur through construction of miles of continuous fence. Fencing could divide portions of habitat used by many species , potentially affecting local populations of animals, for example through restrictions on essential seasonal movements or through isolation of individuals within populations for breeding purposes. Although some animals may be able to pass over, through, or under a chain link fence, not all species or individuals within a species will be able to do so."

Response:

Section 4.7 describes fencing along the railroad right-of-way. In general, the proposed installation of additional fencing has been minimized and is limited to those areas where the track is adjacent to residential areas, and fencing is required for safety and security purposes. Fencing in such developed areas may be less likely to affect wildlife movement.

Comment #11-3

"The Society requests that the MBTA carefully evaluate and weigh the public safety benefits and environmental impacts of future new fencing along all its lines throughout the Commonwealth.

Response:

The MBTA currently installs fencing only as required for public safety and equipment security. Future fencing on any MBTA line will be considered accordingly.

Comments #11-4

"The DEIR contains a level of detail adequate to understand the project as a whole and alternatives that have been considered for siting of local rail stations between Worcester and Framingham. The Final EIR(s) should provide additional, site-specific details regarding rare species impact avoidance; wetlands avoidance and mitigation; and stormwater management system design for the railbed improvements and each proposed new station."

Response:

The railbed improvements, as described in Sections 4.5 and 4.6, have been designed in an effort to minimize or avoid direct impacts to wetland and wildlife resources. Design of each new station also will focus on minimization of impacts and will provide proper mitigation on a site specific basis. These design and mitigation elements will be discussed in detail in the subsequent FEIR on Commuter Rail Stations and Railroad Operations.

Comment #11-5

"The Massachusetts Audubon Society supports the project in concept, provided impacts to sensitive biological and water resources along the project corridor are minimized and carefully managed. The DEIR is adequate, and documents how project impacts have been reduced in some significant ways (i.e. reduction of wetland impacts and fencing, provision for stormwater best management practices at stations). The Final EIR's for the railbed improvements, and Final EIRs for new stations should provide additional details regarding site-specific impacts and mitigation."

Response:

As described is sections 4.4 through 4.7, the railbed improvements have been designed in an effort to minimize impacts to wetland resources and wildlife movements. The FEIR for new stations will provide additional detail of impact and proposed mitigation for each site specific area.

Comment Letter No. 18

Preservation Worcester (2/27/95)

Comment #18-1

"The DEIR defines an interim station and Layover facility to be located adjacent to the existing Amtrak Station and close to Union Station. PW endorses this plan which would accommodate the existing demand for commuter rail now equaling over 500 riders a

day. It also fully expects and plans for Union Station to become the station for the commuter rail extension, once rehabilitated. PW urges that plans to retire the interim station and remodel the layover facility be included in greater detail in the DEIR."

Response:

Plans to "retire" the Interim Station are limited to the removal of the access platform and canopies. The existing parking facilities and amenities (sidewalks, lighting, etc.) will remain and serve Union Station as supplemental parking. Existing signage will be removed, reset, or replaced as required. This work will be coordinated with the Worcester Redevelopment Authority during transition from Interim to Union Station. No plans to remodel the layover facility are anticipated with the possible exception of redesignating additional employee parking.

Comment #18-2

"PW endorses the Worcester Office of Planning and Development's request that the MBTA make the layover facility a double-ended facility once Union Station is operational."

Response:

The layover facility site has insufficient land area to accommodate a double-ended facility. Even without the Interim Station, the track extensions for a double-ended facility would encroach into the Union Station site.

Comment #18-3

"The issues of air quality and noise are of great concern to the residents of the area and will impact business and residential development in the area. Both issues are addressed in the DEIR. Analysis demonstrates a worst case scenario would comply with safe federal guidelines. The reviews, however, were based on new trains, not older models. PW recommends guidelines should be established to assure that only safe, newer trains would be used, not the older trains which would not meet safe standards."

Response:

To provide maximum flexibility in meeting scheduling and maintenance, it is not practical to designate specific train equipment to a particular commuter rail line. The air and noise analyses have been revised for the layover facility, taking into account the mix of old and new locomotives. (See Sections 6.2 and 6.3.)

Comment Letter No. 19

Worcester Executive Office of the City Manager, Office of Planning and Community Development (2/24/95)

Comment #19-2

"OPCD requests information regarding the remodeling of the layover facility once the rehabilitation of Union Station is complete."

Response:

No remodeling of the layover facility is anticipated once Union Station is complete, with the possible exception of redesignating additional employee parking if required. (Also see response to Comment #18-1.)

Comment #19-3

"Also, once completed the rehabilitated Union Station will become the station for the commuter rail extension. The need for a passenger platform at the current Amtrak station would no longer exist. OPCD requests that the MBTA consider making the layover facility a double-ended facility at that time. Such a remodeling may also eliminate the possibility for conflict between the facility and an existing sidetrack and allow larger vehicles to access the train sets."

Response:

The site has insufficient land area to accommodate a double-ended layover facility. In addition, although the Interim Station platform would no longer be required once Union Station is complete, the Interim Station parking facilities would serve Union Station as supplemental parking.

Comment #19-4

"In regards to air quality, the DEIR reviews a worst case scenario of the F40PH-2C and F40PH-2 locomotives likely to see service in Worcester. In this scenario there are no violations of the NO_2 standard. The worst case scenario only reviews those locomotives that are likely to see service on the Worcester Extension, it does not review the potential emission factors of older locomotives such as the 1000-Series (F40PH)."

Response:

The FEIR addresses the NO_2 standard in terms of a locomotive mix that is representative of the normal south side equipment. (See Section 4.2.) In addition, a worst case analysis was performed, using only the older locomotives - a very unlikely situation given that the NO_2 standard is expressed in terms of a one year, averaging period. Even for this very unlikely scenario, there would be no violation of the NO_2 standard.

Comment #19-5

"The DEIR notes assumptions regarding the idling needs of the newer 1050 series locomotives and provides for mitigation strategies. The DEIR does not mention strategies for the older 1000 series locomotives. Additionally, the DEIR provides the result of a "Pure Tone" Analysis in which the 1050-Series meets the Department of Environmental Protection's guidelines concerning sound characteristics. The 1000-series does not meet these guidelines.

Until such time that the MBTA can ensure and demonstrate that 1000 series locomotives will not be stored at the facility, OPCD requests that a mitigation strategy be developed for instances when the 1000-series locomotives are required to layover. The MBTA has already demonstrated a desire to corporate with the City on this issue."

Response:

The revised noise analysis for the layover addresses the differing idling conditions for all series of locomotives. While the 1000-Series does not comply with the DEP guidelines on pure tone, retro-fit noise abatement for these locomotives is not practical. Given the average age of 17 years, most are likely to be retired from service over the next decade. (See Section 6.3.)

Comment #19-6

"In light of recent events at the temporary layover facility, OPCD urges the MBTA to use all expediency in the construction of the new layover facility. The temporary facility is currently located in the Providence and Worcester rail yard and has been the target of criticism by abutting residents. The complaints are in regards to overnight noise and diesel fumes emitted by the idling engines. To the MBTA's credit, steps have been taken to minimize the noise and fume problems. Despite the changes, one engine will continue to idle throughout the night. Because layover operations may be considered more intrusive than normal train noise, the possibility for future complaints still exist. The sooner the new layover facility becomes operational the sooner the trains can be moved away from the sensitive receptors in the vicinity of the Providence and Worcester rail yard."

Response:

In April 1995, the MBTA installed an electrical power source at the temporary layover, eliminating the need for locomotives (one or more) to idle overnight. Every effort is being made to accelerate the permanent layover construction schedule.

Comment Letter No. 37

Town of Ashland, Town Planner (3/8/95)

Comment #37-13

"The Table on Proposed Railroad Vertical Clearance Improvements notes three improvements in Ashland, i.e., Howe Street, High Street, and Fountain Street. It was my previous understanding that Ashland's Fountain Street bridge is critical for movement of emergency and other vehicles in Town and that said bridge would be reconstructed in a timely fashion. This, therefore, may not require the lowering of the tracks; however, does this impact upon the progress of the commuter rail or does lowering the tracks slow down bridge reconstruction? This may also be applicable to the High Street bridge, which has a higher priority for reconstruction."

Response:

Since publication of the DEIR, it has been determined that no track lowering nor bridge raising will occur at Howe Street and Fountain Street as part of this project. It is anticipated that the High Street bridge will be replaced by the MHD in 1996.

Comment #37-21

"As for wetland impacts, 'the primary thrust of the right-of-way and commuter design effort will be to avoid wetland, floodplain and drainage impacts.' This needs to be examined further in light of the Wetlands Protection Act's stringent rules regarding wetland alteration."

Response:

The right-of-way improvements along the project corridor have been designed in an effort to minimize and/or avoid impacts to wetland resources. In addition, the proposed design and mitigation measures will be further examined through the Notices of Intent that have been filed with the local Conservation Commissions in each individual town.

APPENDIX

- MEPA Certificate on November 1994 DEIR, March 16, 1995
- Comment Letters on November 1994 DEIR for Railroad Right-of-Way and Layover Facility FEIR
- List of all Comment Letters on November 1994 DEIR
- Notice of Project Change, May 12, 1995
- MEPA Certificate on Notice of Project Change, June 22, 1995
- Citizens Advisory Committee (CAC) Comments on FEIR, July 27, 1995
- Responses to CAC July 27, 1995 Comments

MEPA CERTIFICATE ON NOVEMBER 1994 DEIR, MARCH 16, 1995

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
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March 16, 1995

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS
ON THE
DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Worcester Commuter Rail Extension Project
PROJECT LOCATION	: Statewide
EOEA NUMBER	: 9154
PROJECT PROPONENT	: Massachusetts Bay Transportation Authority
DATE NOTICED IN MONITOR	: December 7, 1994

The Secretary of Environmental Affairs herein issues a statement that the Draft Environmental Impact Report submitted on the above project adequately and properly complies with the Massachusetts Environmental Policy Act (G. L. c. 30, s. 61-62H) and with its implementing regulations (301 CMR 11.00).

Overview

The Draft Environmental Impact Report (DEIR) has evaluated the environmental impacts and issues relating to the proposed initiation of commuter rail service along an existing 23 mile rail corridor between the Framingham commuter rail line and the City of Worcester. The service will use the Conrail track which passes through Worcester, Millbury, Grafton, Westborough, Southborough, Ashland, and Framingham. A second track will be re-laid along 11 miles of existing roadbed from Westborough to Worcester. An interim service along this route was reinstated to Worcester in the fall of 1994, and was recently reported to be very successful in attracting ridership. Full service is scheduled to be operational by December 31, 1996, as required by the air quality regulations of the Department of Environmental Protection (DEP).

The DEIR was pre-reviewed by the Citizens Advisory Committee (CAC) and comments from the CAC were included in the DEIR. Generally, these comments appear to be comprehensive, accurate, and fair. They should receive full consideration in the FEIR. Citizens in the municipalities affected by the project have shown

a high level of interest in this project, as well; their comments are referenced in this Certificate and listed below. Sensitivity to these concerns should be demonstrated in revisions and refinements to the project design and siting, in the operational plans, and in the commitments to the environmental mitigation proposed in the FEIR.

Subsequent to this DEIR review, the MBTA will be considering the appropriateness of bringing forward certain elements of the project sooner than others. This could be handled in separate FEIR reviews. Information gathered during the DEIR review gives some preliminary indication of the advantages and disadvantages of such a plan. The City of Worcester, Office of Planning and Community Development comment, for example, has identified a need to complete the permanent layover facility as soon as possible because of the neighborhood complaints regarding noise and diesel fumes at the temporary layover site in the Providence and Worcester rail yard.

The Special Procedure established for this project would enable separate review of project components. However, this would need to be accomplished so as to avoid any inadvertent shift or increase in environmental impacts. As an example, the CAC comment raises the concern that there may be unexpected impacts associated with the advancement of individual stations out of phase with the others. The Committee recommended that the FEIR cover at least the Ashland, Southborough, and Westborough stations.

Another advantage of two separate and sequential FEIRs would be that the second FEIR could provide an additional opportunity to answer any outstanding issues raised during the review of the first FEIR. This would help to ensure that significant and controversial issues would be addressed to the greatest extent.[1] A proposal to prepare separate FEIRs should be filed as a Notice of Project Change with a recommendation for the topics to be considered in each document. This approach will provide additional opportunity for public comment.

The remainder of the Certificate will highlight important issues to complement and reinforce key concerns raised in the CAC comment and those listed at the close of the Certificate.

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[1] This could also give the Town of Ashland an opportunity to review and comment on station plans received late in the DEIR public review period.

Revenue Issues

Commenters have raised the issue of the MBTA's capability to finance this project while maintaining existing services and funding service expansions already approved, a concern driven by increases in project cost and reductions in the MBTA operating budget. Although a financial feasibility analysis reference in the DEIR (p. 3-48) concluded that the Old Colony project, major capital improvements including the Newburyport extension, and the reinstatement of the Worcester commuter line were within the overall financial capability of the MBTA, no supporting information was provided.

This is an important matter that warrants more discussion in the FEIR. As suggested in the comments, in a worst case situation the MBTA could be put in a position of having to make tough choices such as increasing fares, increasing assessments, reducing services, and deferring or eliminating mitigation in order to maintain and expand the transportation system. Should this occur, then the ridership gains of this project might be off-set by losses in ridership elsewhere in the system. The net effect could be increased vehicle miles of travel (VMT) and higher levels of air pollutants. The FEIR should provide sufficient information to demonstrate that the MBTA will be able to operate this project without adversely affecting its services elsewhere.

Commenters have also expressed concern about financial assessments which are imposed on communities within, and not those outside, the district, even though citizens in non-member communities will use the service. While I appreciate such concerns, I find they are not within the scope of MEPA review. In general, MBTA's financial systems and decision-making are mnot subject to this review, except to the extent they have implications for the environmental impacts of proposed projects.

Alternatives

Alternative Transportation Modes

The analysis of alternative transportation service options is a comparative summary of the Worcester Extension project with the No Build and Express Bus Service options. The analysis concludes that bus service cannot attain the level of ridership achievable by commuter rail. However, bus service is less expensive; operation and maintenance costs have been estimated to

be $1.53 million ($1.96 per passenger), compared with $5.08 million ($4.33 per passenger) for the Worcester Extension Service. According to the DEIR, environmental impacts appear to be somewhat less extensive with busing due to the fact that station facilities would be limited to parking. However, the impacts of the alternatives have not been quantified for comparative purposes and the information provided in this section of the DEIR allows only limited understanding of this matter.

The ridership projections for commuter rail and bus services were estimated based on census and other data for the cities and towns in the transportation system capture areas. Certain assumptions were also made about transportation networks and mode choice factors (p. 4-4) to arrive at the ridership estimates. Were these same assumptions used in the ridership study in Section 5? What mode choice factors were used for rail and bus services and how were those factors used in the analysis? What is the degree of accuracy of the ridership projections, given that 1980 census data were used? The inclusion of this information with the DEIR ridership study in Appendix II, Section 2 would have been appropriate.

A comparative analysis of vehicle miles of travel (VMT) and air emissions between Build and No Build conditions was based on the 1994 ridership projections (Section 5.5).[2] This analysis was done to show the regional air quality benefit of the Worcester Extension project. It was estimated that regional VMT will be reduced by 118,000 in 1996. This corresponds to a net VOC reduction of 113 kilograms per day (kg/day), a reduction of NOx by 199 kg/day and a CO reduction of 1584 kg/day. Because speeds on the Mass Pike are expected to increase to some extent, emissions reductions have been estimated to be greater than the effects of the commuter rail extension project.

Section 4 of the DEIR concludes with a comment that the Worcester Extension project is required by the Department of Environmental Protection (DEP), air quality regulations (310 CMR 7.36 (2) (c)2), unless substitution of an alternative becomes necessary because the engineering, environmental impacts, or economic impacts cause the project to be infeasible. Although it appears to be unintended, the limited text leads to the question the CAC has raised. Is this significant state transportation

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[2] The assumptions in this analysis have been discussed to a greater degree than the ridership projections used in the comparison between mode choices.

project justified primarily because it has been found to be "not infeasible?" A more thoughtful response (which may take note of recently published ridership data) is needed in the FEIR.

Regional Station Alternative

The DEIR provides enough information about potential regional station site alternatives to demonstrate that regional station siting for the commuter rail extension will be significantly more complicated and difficult than intermediate station layout and design, due in large part to environmental impacts and costs. In addition, the DEIR indicates that neither the ridership demand for a regional station nor the negative effects of the intermediate station plan are so compelling that a regional station must be advanced immediately and in spite of the environmental impacts and costs associated with it.

Commenters from the Town of Westborough have expressed an interest in the substitution of a regional station because of the impacts predicted at the Westborough station site. Concerns have been raised in other communities as well that an intermediate station could become, de facto, a regional station. Finally, the CAC and others have advocated strongly that a feasibility study of an I-495 regional station be undertaken before decisions are made on the intermediate stations.

I find that the DEIR has been responsive to the scoping certificate on this issue. I also note that the MBTA will be conducting a report to the Legislature on this issue in the near future, as directed by the recently passed Transportation Bond Bill. I request that the MBTA carefully consider the concerns and arguments raised during this review. I also request that the report to the Legislature be made available for public comment (through a notice in the Environmental Monitor) and that the (next) FEIR report on the results. I leave it to the judgment of the MBTA, however, to decide whether those results warrant a change in the intermediate station analysis, to be presented in the FEIR.

Ridership Projections

The DEIR has explained that four station build out scenarios were used as the basis for modelling ridership. However, the results, in Tables 5.3-1 and -2, and the discussion consider only two alternatives (Alternate 3 and 4), which shows the predicted range of ridership at the intermediate stations for 1996. It is

unclear why the results for Alternate 1 and 2 were not also presented here to understand the effects of unconstrained parking and the inclusion of a regional station on ridership. This information should be included in the FEIR.

The interim service has been operating for several months and ridership has presumably stabilized. The FEIR should evaluate the accuracy of the ridership projections for Worcester based on actual ridership data. If possible, the conclusions drawn from this assessment should be extrapolated to the intermediate station ridership projections to verify that the programmatic design for those stations is sound.

The impact that the interim service has had on other HOV modes, in particular bus service, should be assessed in the FEIR, as per the CAC comment.

Regional Traffic

The DEIR has predicted "at least modest reductions" in traffic volumes on Route 9 and the Massachusetts Turnpike, while access routes to the stations will experience increased traffic during peak hours of travel. The most significant traffic reduction in 1996 is expected on the Mass Pike between Route 128 and Boston (1400 fewer vehicles in the AM peak).

Layover Facilities

The layover facility will consist of new railroad tracks for four, 9-car train sets, internal access driveways, an electrical substation, a 30 foot by 50 foot maintenance building, fencing, lighting, fire hydrants and an employee parking lot. Nighttime storage and train end runs will occur in the layover facility. The site selection process considered certain criteria, primarily size and location near the last station on the line, in order to identify a preferred location. According to the DEIR, none of the 13 potential sites met all the criteria. The preferred alternative (site 8), at the Conrail Yard, MP 43.5 in Worcester, is in a predominantly industrial area.

The City of Worcester, Office of Planning and Community Development and Preservation Worcester prefer the proposed location because it accommodates four tracks, is adjacent to the Amtrak station, is within a mile of Union Station, the area is industrial, and the location provides parking and facilities for

personnel. As suggested by the City, it may also be possible to realign the site to provide a double-ended facility after permanent service is initiated from Union Station.

Because of expected noise, vibration, odor, and air quality impacts, layover facility siting avoids residential areas, wherever possible. However, there is an elderly housing complex, the Mt. Carmel Apartments, located on the north side of Shrewsbury Street, within 300 feet of the centerline of the layover facility. The DEIR predicted that these apartments may be exposed to an Ldn of 70 dBA under worst case conditions. However, no noise mitigation is planned, because the report indicates that mitigation is only necessary when noise impacts reach or exceed 74 dBA Ldn. This conclusion should be explained in terms of ambient noise levels, the applicable noise impact criteria used to draw this conclusion, and the location where the noise impact was measured.

Reducing train idling time is an effective way to limit locomotive noise impacts. The MBTA has minimal ability, however, to control idling in cold weather. Consequently, this mitigation measure would be unreliable. Electric power sources provide an alternative way to control idling noise. However, the report provides no assurances that this alternative source of power will be used for this purpose. Additional discussion of this issue should be provided in the FEIR to better understand existing applications, the potential effectiveness in controlling auxiliary engine noise, and the degree of noise attenuation that could be achieved at sensitive receptors, such as the elderly housing complex.

The results of the pure tone analysis indicate that the DEP guideline, i.e. the peak exceeds each adjacent octave band sound pressure level by more than 3 dB, will be exceeded for the older 1000-series locomotives. The MBTA is purchasing new locomotives, i.e. 1050 series, which will not have as great an impact, but the phase out of the older locomotives is unspecified. Therefore, the FEIR should consider the frequency of use of the noisier locomotives at initiation of service and long-term to more accurately forecast pure-tone exceedances. The FEIR should consider the feasibility of operating only newer train sets.

The site plan of the layover facility, Figure 9.0-1, also shows that the site is being used as an interim station with platforms, a passenger drop-off area, and a 177 parking space lot. The FEIR should explain what will happen to the station facilities after Union Station is developed. As requested by the

City of Worcester, Office of Planning and Community Development, the FEIR should include any plans for future remodelling of the layover facility after Union Station is complete. The FEIR should also specify the noise mitigation measures that will be undertaken during construction of the layover facility. Those described in the DEIR (p. 9-10) seem appropriate, but no commitments have been made.

Rail Line Impacts

As a result of the addition of a double track along a 7 mile segment from Westborough to Worcester, there will probably be additional drainage, wetlands, wildlife, and archaeological resource impacts. The rail embankment widening and fencing will cause impacts too. However, the DEIR indicates that the areas of new disturbances will not be identified until final design. This raises the concern that the public review may not disclose the extent of the project-related impacts to the natural environment because the FEIR is due at about the 60 percent design stage. To the extent possible, these impacts should be described fully in the FEIR and the report should demonstrate that an effort was made to avoid and minimize damage to resource areas. As noted previously, submission of a separate FEIR for issues relating to the rail line and layover facilities will be considered in a NPC after completion of the DEIR review.

The same level of impact analysis should be provided for the inadequate bridges which will be reconfigured, (the Pine Street Bridge in Grafton, and the Route 85 bridge in Southborough). I note that the CAC and the MAPC have raised a variety of questions relating to bridge reconstruction and lowering of the rail line for double-stacked trains that should be addressed in the FEIR. There are also three grade crossings between Framingham and Worcester that will be affected by the additional train operations. Impacts associated with the increased rail service should be explained in the FEIR.

The implementation of the commuter service (20 trains per day) has been predicted to have a noise impact on 6 residences in Grafton, and the expanded service (32 trains per day or 12 additional trains) is expected to impact 92 residences along the corridor (Table 7.3-2), due to increased train speeds as well as an increase in the number of trains. The DEIR has recommended noise barriers, because of the potential effectiveness, and ballast mats to control vibration. At the same time, the DEIR indicates that two percent of the construction costs can be used

for mitigation. Will there be sufficient funding to mitigate the noise and vibration impacts to the desired levels? Have the barriers been found to be cost effective and therefore implementable? In areas that do not appear to meet the cost effective criterion, will noise attenuation measures be proposed for the buildings directly, or will other measures be proposed?

Commenters have raised a concern that 31 trains will be running as late as 1:20 AM (p. 3-45). The FEIR report should be particularly sensitive to nighttime noise impacts and consider ways to control those late night and early morning operations. The FEIR should also respond to concerns expressed by the City of Boston with noise impacts in the Framingham-Boston corridor, and concerns that the noise standards used do not take into account background noise and cumulative impacts.

The DEIR includes an inventory of the expected train vibration impact (Table 7.3-4) to 41 residences. After reviewing the vibration mitigation options, the DEIR concludes that about 4650 feet of ballast mats would be needed to reduce the impact entirely. The report concludes that it may not be cost effective to protect only a few houses, however. Moreover, mats may not be as effective in areas where the vibration is due to low frequency components. The FEIR should clarify the vibration mitigation plan based on further assessment of the areas of impact.

Archaeology and Historical Impacts

Although the main text is quite abbreviated, Appendix I in DEIR is sufficiently complete to understand the work undertaken to identify and remediate archaeological and historical impacts. The results of background research, an architectural windshield survey, an archaeological walkover survey, and predictive modelling to identify the archaeological sensitivity of the sites impacted by the project.

Areas of potential disturbance, with the exception of the bridge work, will not be known until final design, and so the extent of the potential impacts is unclear. The recommended station sites generally are considered potentially significant for archaeological resources; all interim station locations, including Millbury station sites (Route 122, and Route 20), Grafton, Westborough, Southborough, and Ashland are identified for further study.

The DEIR has also recommended a complete architectural survey; however, the recommendations for the work on historical bridge structures remain unclear. This should be addressed in the FEIR. I concur with the suggestions of the Massachusetts Historical Commission (MHC) as to how and when to proceed with surveys and more advanced investigations, and what information should beprovided in the FEIR.

Drainage

The FEIR should provide more detailed information about the required culvert repair work and any new drainage outlets which will result in wetlands impacts. Commitments to the maintenance of the storm drainage system should also be made in the FEIR. What specific measures are needed for the oil drip pans and separators, such as those described for the layover facility (p. 9-11)? Although the description of the systems appears to suggest that these may not be the typical oil separators, the degree of effectiveness has not been predicted.

Station by Station Comments

The following discussion of station impacts is a summary of some of the salient points raised in the comments listed below. I note that comments like those submitted on behalf of the Town of Westborough cannot be easily summarized; as provided in the MEPA regulations, those comments nonetheless require a response in the FEIR. In addition, the Draft Section 61 Finding in the FEIR should itemize the proposed mitigation measures by station location.

Many favorable comments were received for the Southborough station proposal. The Westborough station site appears to be the most controversial, based on the number of issues raised. Many comments advocated for the development of a more regional station, in order to eliminate the localized impacts on some municipalities, particularly the impacts in the Towns of Westborough and Southborough.

The CAC and several commenters have concerns that traffic will be diverted and impacts worsened if adjacent stations are not developed within the same timeframe. This issue needs to be considered in the FEIR.

Agricultural impacts may result indirectly from growth that is induced by expanded commuter rail service. As requested in the comment from the Department of Food and Agriculture, mitigation off-sets for indirect farmland impacts should be considered in the FEIR. According to that agency, several commuter rail stations have the potential to provide marketing opportunities for local farmers.

Bicycle and pedestrian accessibility to and from the proposed stations is an important issue; amenities such as sidewalks, bike paths, lockers, and good travel routes to the station need attention in the FEIR.

Ashland - The CAC comment raises important issues concerning platform alignments and parking availability that need further evaluation.

It appears that the south parking lot access at Route 135 will have a significant impact. The Town of Ashland has recommended widening for designated turn lanes and signalization for safety. This should be evaluated in the FEIR. There are also concerns with the intersections in Ashland that are at levels of service (LOS) D/F. Mitigation measures for these locations should also be considered.

The MetroWest comment supports the east alternative, chosen by Ashland Selectmen because it has the potential to improve the waste site cleanup area, opens areas for commercial and industrial development, has minimal wetland impact, and avoids a grade crossing for some commuters.

There is also comment in support of the Ashland west alternative which indicates that the traffic and noise impacts would be lower and that at grade crossings would be shorter in length. Furthermore, the west alternative avoids potential delays with the Nyanza waste site cleanup. This alternative has the potential for localized business impacts, according to the comment from Daniel Giargiari, which should be addressed in response to the concerns raised.

Millbury - The CAC comment questions some traffic assumptions and results that should be reconsidered in the FEIR. In addition, a drainage system maintenance plan and commitments to fulfill the requirements of the plan need to be clarified in the FEIR.

More traffic mitigation may be needed at Route 122/20, according to commenters, and land taking is a concern. The access road from Route 20 could be developed so as to encourage economic development.

Bicycling and pedestrian access options should be pursued, and a commenter notes that the Route 122 station location is preferable because it is accessible to pedestrians and by bicycle.

Southborough - Commenters indicate that the pedestrian overpass is aesthetically out of character with the neighborhood. As an alternative, reactivation of the existing underpass has been proposed. The compatibility of the station design in the rural business district needs to be shown in the FEIR.

Some have solicited a commitment that a garage will not be built at the proposed Southborough Station and the reservation of 90 spaces on north side for residents only is controversial.

As expected, there are traffic concerns and impacts on the residential character of the area. Closure of the median on Route 9 at Woodland Road has been reported to be held up because of the EIR review for the commuter rail project. It is not clear why this is so. Furthermore, the CAC comment recommends that the proposed signal timing changes at Route 85/Southville Road be reviewed because this measure may not be sufficient to mitigate the traffic impacts.

Westborough - Historical properties have been overlooked according to the comment from the Westborough Historical Commission. Furthermore, archaeological survey data has not yet been provided to the Town or the Massachusetts Historical Commission.

Neighbors have raised concerns about noise impacts on homes and the neighborhood that deserve attention in the FEIR.

There are also concerns with the safety of children who walk on Fisher Street during commuter rush hours. Sidewalks are in poor condition or non-existent; however, according to the CAC, plans for sidewalks are being developed.

Traffic volumes on Milk to Maynard Streets should be higher than indicated in the DEIR, and volumes on Fisher Street appear to be too low also. The traffic assumptions have been questioned

by the CAC, the Town of Westborough municipal agencies and the MBTA Advisory Committee. Background growth does not appear to have been fully accounted for in the study and commuter route distribution has been questioned.

The roadway improvements at the Route 9/Otis Street intersection may not make this the preferred route to the station. A route from Milk Street to Fisher Street, and then to Smith Valve would be more direct, based on comments. Safety issues at the key intersections have not been addressed to the satisfaction of commenters. Streets such as Arch Street are narrow and rural in character. However, these local streets have been impacted to a great degree by the development on Route 9 near Otis Street. These traffic and safety concerns warrant thoughtful consideration in the FEIR.

Grafton - A commenter sees an economic development potential being created in Central Massachusetts by the Grafton Station siting. A reverse commuting pattern could be established because of the linkage opportunity for biotech parks along the rail corridor. The traffic analysis should reconsider station traffic to Green Street in Shrewsbury.

Wellesley - The Town has raised a concern that no impact assessment of the 3 stations in Wellesley has been provided in the DEIR. The Town has specific safety concerns.

Boston - A comment has observed that the DEIR did not provide a study of the potential for a new station at Kenmore Square (Yawkey Way) and its connection to the urban ring. The City of Boston has pointed out that additional information is needed to address pedestrian and platform issues at South Station.

Newton - The Department of Planning and Development has raised the concern that the basic and full build service may cause significant scheduling disruptions on existing services. This may be particularly so at the three stations in Newton because this is a single track service.

March 16, 1995
DATE

Trudy Coxe
Trudy Coxe

Comments received:

10/4/94	Russell Fustino
11/22/94	Office of Selectmen and Town Manager, Town of Ashland
1/6/95	Board of Selectmen, Town of Wellesley
1/6/95 3/8/95	John Woodward
1/8/95	Anne M. Huff
1/10/95	Westborough Historical Commission
1/22/95	Bicycle Coalition of Massachusetts
2/1/95	Brennan F. Wall
2/2/95	Judith and Thomas Little
2/2/95	Andrew and Teresa Boyce
2/5/95	Massachusetts Restaurant Association
2/8/95	Jane Fedorowicz and Michael Golibersuch
2/8/95	William Murphy
2/8/95	Claudia J. Lefter
2/12/95	Scott Rossiter
2/14/95	Joseph Harrington
2/14/95	Patricia C. Pirozzi
2/14/95	James M. Waddell
2/16/95	Medical Academic and Scientific Community Organization, Inc.
2/17/95	Helen and Bill Panas
2/17/95	Brennan F. Wall
2/21/95	Mrs. Paul A. Smith
2/22/95	Elizabeth Colbert
2/23/95	James P. Knowles
2/23/95	Peter Venuto
2/20/95	Joseph P. Orlando
2/20/95	Mary Cullen
2/24/95	City of Worcester, Office of Planning and Community Development
2/24/95	Mary Fisher and Family
2/24/95	Tufts University, School of Veterinary Medicine
2/24/95	Stephen and Charlene Henry
2/26/95	Susan B. Stager
2/27/95	Preservation Worcester
2/27/95	Police Department, Westborough
2/28/95	Ellen L. Giargiari
2/28/95	MAPC
3/3/95	Keith K. Davison
3/4/95	Jane and Richard Dunphy
3/3/95	Burnham's Supper House
3/3/95	Mario Avelloni
3/5/95	Richard E. Fournier, Jr.
3/5/95	Robert L. and Barbara R. M. Brais

3/5/95	Sally Tajiani
3/5/95	Alan Pl and Janice R. Silvestry
3/6/95	Town of Westborough (Selectmen, MBTA Advisory Committee, Planning Board, Police Dept., Public School Committee, Joyce Coll, Lou and Maureen Jankauskas, Ellen Gugel, Barbara Reismann, Barbara Sullivan (and others already cited previously)
3/6/95	Bill and Mary Anne Coveney
3/6/95	E. Thomas and Judith McCabe, et. al
3/6/95	Dorothea E. MacLeod
3/6/95	Jackie Adams
3/6/95	Department of Food and Agriculture
3/6/95	Rosemary Johnson
3/6/95	Town of Ashland, Office of Selectmen
3/6/95	Senator Robert A. Durand
3/6/95	Town of Grafton, Board of Selectmen
3/6/95	Nelson Holden
3/7/95	Marvin S. Silver
3/7/95	MetroWest
3/7/95	Brian and Antoinette Kennedy
3/7/95	Larry Gomes
3/7/95	Department of Planning and Development, City of Newton
3/7/95	Cheryl and Paul Crivello
3/7/95	Town of Framingham, Planning Department
3/7/95	Town of Southborough, Board of Selectmen
3/7/95	Jennifer M. Speed
3/7/95	Diane M. Power
3/7/95	Rep. Harriette L. Chandler
3/8/95	Jacqueline and David Cox
3/8/95	City of Boston, The Environment Department
3/8/95	BRA
3/8/95	People for Ashland West Alternative, John J. Kelly et. al
3/8/95	Massachusetts Audubon Society
3/9/95	Mary Richards, DEP/CERO
3/9/95	Stephen Kerlin, Town of Ashland
3/9/95	Town of Hopkinton, Office of Selectmen
3/9/95	MHC
3/9/95	Senator Matthew J. Amorello
3/8/95,3/9/95	Union Station Alliance
3/9/95	Andrew B. O'Donnell
3/9/95	Ashland MBTA Rail Committee
3/9/95	Massachusetts Biotechnology Research Park
3/9/95	Central Massachusetts Regional Planning Commission

Late comments:

3/10/95	Dorothy McMahon
3/10/95	Julia McTigue Jacobs
3/10/95	Bruce R. Johnson
3/14/95	Thomas R. Hoover, Worcester City Manger

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TC/NB/nb/jr

COMMENT LETTERS ON NOVEMBER 1994 DEIR FOR RAILROAD RIGHT-OF-WAY AND LAYOVER FACILITY FEIR

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street, Boston, 02202

WILLIAM F. WELD
GOVERNOR
ARGEO PAUL CELLUCCI
LIEUTENANT GOVERNOR
TRUDY COXE
SECRETARY

Tel: (617) 727-9800
Fax: (617) 727-2754

March 16, 1995

Comment Letter No. 1

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS
ON THE
DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Worcester Commuter Rail Extension Project
PROJECT LOCATION	: Statewide
EOEA NUMBER	: 9154
PROJECT PROPONENT	: Massachusetts Bay Transportation Authority
DATE NOTICED IN MONITOR	: December 7, 1994

The Secretary of Environmental Affairs herein issues a statement that the Draft Environmental Impact Report submitted on the above project adequately and properly complies with the Massachusetts Environmental Policy Act (G. L. c. 30, s. 61-62H) and with its implementing regulations (301 CMR 11.00).

Overview

The Draft Environmental Impact Report (DEIR) has evaluated the environmental impacts and issues relating to the proposed initiation of commuter rail service along an existing 23 mile rail corridor between the Framingham commuter rail line and the City of Worcester. The service will use the Conrail track which passes through Worcester, Millbury, Grafton, Westborough, Southborough, Ashland, and Framingham. A second track will be re-laid along 11 miles of existing roadbed from Westborough to Worcester. An interim service along this route was reinstated to Worcester in the fall of 1994, and was recently reported to be very successful in attracting ridership. Full service is scheduled to be operational by December 31, 1996, as required by the air quality regulations of the Department of Environmental Protection (DEP).

The DEIR was pre-reviewed by the Citizens Advisory Committee (CAC) and comments from the CAC were included in the DEIR. Generally, these comments appear to be comprehensive, accurate, and fair. They should receive full consideration in the FEIR. Citizens in the municipalities affected by the project have shown 1

a high level of interest in this project, as well; their comments are referenced in this Certificate and listed below. Sensitivity to these concerns should be demonstrated in revisions and refinements to the project design and siting, in the operational plans, and in the commitments to the environmental mitigation proposed in the FEIR. 2

Subsequent to this DEIR review, the MBTA will be considering the appropriateness of bringing forward certain elements of the project sooner than others. This could be handled in separate FEIR reviews. Information gathered during the DEIR review gives some preliminary indication of the advantages and disadvantages of such a plan. The City of Worcester, Office of Planning and Community Development comment, for example, has identified a need to complete the permanent layover facility as soon as possible because of the neighborhood complaints regarding noise and diesel fumes at the temporary layover site in the Providence and Worcester rail yard.

The Special Procedure established for this project would enable separate review of project components. However, this would need to be accomplished so as to avoid any inadvertent shift or increase in environmental impacts. As an example, the CAC comment raises the concern that there may be unexpected impacts associated with the advancement of individual stations out of phase with the others. The Committee recommended that the FEIR cover at least the Ashland, Southborough, and Westborough stations.

Another advantage of two separate and sequential FEIRs would be that the second FEIR could provide an additional opportunity to answer any outstanding issues raised during the review of the first FEIR. This would help to ensure that significant and controversial issues would be addressed to the greatest extent.[1] A proposal to prepare separate FEIRs should be filed as a Notice of Project Change with a recommendation for the topics to be considered in each document. This approach will provide additional opportunity for public comment.

The remainder of the Certificate will highlight important issues to complement and reinforce key concerns raised in the CAC comment and those listed at the close of the Certificate.

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[1] This could also give the Town of Ashland an opportunity to review and comment on station plans received late in the DEIR public review period.

Revenue Issues

Commenters have raised the issue of the MBTA's capability to finance this project while maintaining existing services and funding service expansions already approved, a concern driven by increases in project cost and reductions in the MBTA operating budget. Although a financial feasibility analysis reference in the DEIR (p. 3-48) concluded that the Old Colony project, major capital improvements including the Newburyport extension, and the reinstatement of the Worcester commuter line were within the overall financial capability of the MBTA, no supporting information was provided.

This is an important matter that warrants more discussion in the FEIR. As suggested in the comments, in a worst case situation the MBTA could be put in a position of having to make tough choices such as increasing fares, increasing assessments, reducing services, and deferring or eliminating mitigation in order to maintain and expand the transportation system. Should this occur, then the ridership gains of this project might be off-set by losses in ridership elsewhere in the system. The net effect could be increased vehicle miles of travel (VMT) and higher levels of air pollutants. The FEIR should provide sufficient information to demonstrate that the MBTA will be able to operate this project without adversely affecting its services elsewhere. 3

Commenters have also expressed concern about financial assessments which are imposed on communities within, and not those outside, the district, even though citizens in non-member communities will use the service. While I appreciate such concerns, I find they are not within the scope of MEPA review. In general, MBTA's financial systems and decision-making are mnot subject to this review, except to the extent they have implications for the environmental impacts of proposed projects.

Alternatives

Alternative Transportation Modes

The analysis of alternative transportation service options is a comparative summary of the Worcester Extension project with the No Build and Express Bus Service options. The analysis concludes that bus service cannot attain the level of ridership achievable by commuter rail. However, bus service is less expensive; operation and maintenance costs have been estimated to

be $1.53 million ($1.96 per passenger), compared with $5.08 million ($4.33 per passenger) for the Worcester Extension Service. According to the DEIR, environmental impacts appear to be somewhat less extensive with busing due to the fact that station facilities would be limited to parking. However, the impacts of the alternatives have not been quantified for comparative purposes and the information provided in this section of the DEIR allows only limited understanding of this matter. 4

The ridership projections for commuter rail and bus services were estimated based on census and other data for the cities and towns in the transportation system capture areas. Certain assumptions were also made about transportation networks and mode choice factors (p. 4-4) to arrive at the ridership estimates. 5 Were these same assumptions used in the ridership study in Section 5? What mode choice factors were used for rail and bus services and how were those factors used in the analysis? 6 What is the degree of accuracy of the ridership projections, given that 1980 census data were used? 7 The inclusion of this information with the DEIR ridership study in Appendix II, Section 2 would have been appropriate.

A comparative analysis of vehicle miles of travel (VMT) and air emissions between Build and No Build conditions was based on the 1994 ridership projections (Section 5.5).[2] This analysis was done to show the regional air quality benefit of the Worcester Extension project. It was estimated that regional VMT will be reduced by 118,000 in 1996. This corresponds to a net VOC reduction of 113 kilograms per day (kg/day), a reduction of NOx by 199 kg/day and a CO reduction of 1584 kg/day. Because speeds on the Mass Pike are expected to increase to some extent, emissions reductions have been estimated to be greater than the effects of the commuter rail extension project.

Section 4 of the DEIR concludes with a comment that the Worcester Extension project is required by the Department of Environmental Protection (DEP), air quality regulations (310 CMR 7.36 (2) (c)2), unless substitution of an alternative becomes necessary because the engineering, environmental impacts, or economic impacts cause the project to be infeasible. Although it appears to be unintended, the limited text leads to the question the CAC has raised. Is this significant state transportation 8

[2] The assumptions in this analysis have been discussed to a greater degree than the ridership projections used in the comparison between mode choices.

project justified primarily because it has been found to be "not infeasible?" A more thoughtful response (which may take note of recently published ridership data) is needed in the FEIR.

Regional Station Alternative

The DEIR provides enough information about potential regional station site alternatives to demonstrate that regional station siting for the commuter rail extension will be significantly more complicated and difficult than intermediate station layout and design, due in large part to environmental impacts and costs. In addition, the DEIR indicates that neither the ridership demand for a regional station nor the negative effects of the intermediate station plan are so compelling that a regional station must be advanced immediately and in spite of the environmental impacts and costs associated with it.

Commenters from the Town of Westborough have expressed an interest in the substitution of a regional station because of the impacts predicted at the Westborough station site. Concerns have been raised in other communities as well that an intermediate station could become, de facto, a regional station. Finally, the CAC and others have advocated strongly that a feasibility study of an I-495 regional station be undertaken before decisions are made on the intermediate stations.

I find that the DEIR has been responsive to the scoping certificate on this issue. I also note that the MBTA will be conducting a report to the Legislature on this issue in the near future, as directed by the recently passed Transportation Bond Bill. I request that the MBTA carefully consider the concerns and arguments raised during this review. I also request that the report to the Legislature be made available for public comment (through a notice in the Environmental Monitor) and that the (next) FEIR report on the results. I leave it to the judgment of the MBTA, however, to decide whether those results warrant a change in the intermediate station analysis, to be presented in the FEIR. 9

Ridership Projections

The DEIR has explained that four station build out scenarios were used as the basis for modelling ridership. However, the results, in Tables 5.3-1 and -2, and the discussion consider only two alternatives (Alternate 3 and 4), which shows the predicted range of ridership at the intermediate stations for 1996. It is

unclear why the results for Alternate 1 and 2 were not also presented here to understand the effects of unconstrained parking and the inclusion of a regional station on ridership. This information should be included in the FEIR. 10

The interim service has been operating for several months and ridership has presumably stabilized. The FEIR should evaluate the accuracy of the ridership projections for Worcester based on actual ridership data. If possible, the conclusions drawn from this assessment should be extrapolated to the intermediate station ridership projections to verify that the programmatic design for those stations is sound. 11

The impact that the interim service has had on other HOV modes, in particular bus service, should be assessed in the FEIR, as per the CAC comment. 12

Regional Traffic

The DEIR has predicted "at least modest reductions" in traffic volumes on Route 9 and the Massachusetts Turnpike, while access routes to the stations will experience increased traffic during peak hours of travel. The most significant traffic reduction in 1996 is expected on the Mass Pike between Route 128 and Boston (1400 fewer vehicles in the AM peak).

Layover Facilities

The layover facility will consist of new railroad tracks for four, 9-car train sets, internal access driveways, an electrical substation, a 30 foot by 50 foot maintenance building, fencing, lighting, fire hydrants and an employee parking lot. Nighttime storage and train end runs will occur in the layover facility. The site selection process considered certain criteria, primarily size and location near the last station on the line, in order to identify a preferred location. According to the DEIR, none of the 13 potential sites met all the criteria. The preferred alternative (site 8), at the Conrail Yard, MP 43.5 in Worcester, is in a predominantly industrial area.

The City of Worcester, Office of Planning and Community Development and Preservation Worcester prefer the proposed location because it accommodates four tracks, is adjacent to the Amtrak station, is within a mile of Union Station, the area is industrial, and the location provides parking and facilities for

personnel. As suggested by the City, it may also be possible to realign the site to provide a double-ended facility after permanent service is initiated from Union Station.

Because of expected noise, vibration, odor, and air quality impacts, layover facility siting avoids residential areas, wherever possible. However, there is an elderly housing complex, the Mt. Carmel Apartments, located on the north side of Shrewsbury Street, within 300 feet of the centerline of the layover facility. The DEIR predicted that these apartments may be exposed to an Ldn of 70 dBA under worst case conditions. However, no noise mitigation is planned, because the report indicates that mitigation is only necessary when noise impacts reach or exceed 74 dBA Ldn. This conclusion should be explained in terms of ambient noise levels, the applicable noise impact criteria used to draw this conclusion, and the location where the noise impact was measured. 13

Reducing train idling time is an effective way to limit locomotive noise impacts. The MBTA has minimal ability, however, to control idling in cold weather. Consequently, this mitigation measure would be unreliable. Electric power sources provide an alternative way to control idling noise. However, the report provides no assurances that this alternative source of power will be used for this purpose. Additional discussion of this issue should be provided in the FEIR to better understand existing applications, the potential effectiveness in controlling auxiliary engine noise, and the degree of noise attenuation that could be achieved at sensitive receptors, such as the elderly housing complex. 14

The results of the pure tone analysis indicate that the DEP guideline, i.e. the peak exceeds each adjacent octave band sound pressure level by more than 3 dB, will be exceeded for the older 1000-series locomotives. The MBTA is purchasing new locomotives, i.e. 1050 series, which will not have as great an impact, but the phase out of the older locomotives is unspecified. Therefore, the FEIR should consider the frequency of use of the noisier locomotives at initiation of service and long-term to more accurately forecast pure-tone exceedances. The FEIR should consider the feasibility of operating only newer train sets. 15 16

The site plan of the layover facility, Figure 9.0-1, also shows that the site is being used as an interim station with platforms, a passenger drop-off area, and a 177 parking space lot. The FEIR should explain what will happen to the station facilities after Union Station is developed. As requested by the 17

City of Worcester, Office of Planning and Community Development, the FEIR should include any plans for future remodelling of the layover facility after Union Station is complete. The FEIR should also specify the noise mitigation measures that will be undertaken during construction of the layover facility. Those described in the DEIR (p. 9-10) seem appropriate, but no commitments have been made. 18 19

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Although the main text is quite abbreviated, Appendix I in DEIR is sufficiently complete to understand the work undertaken to identify and remediate archaeological and historical impacts. The results of background research, an architectural windshield survey, an archaeological walkover survey, and predictive modelling to identify the archaeological sensitivity of the sites impacted by the project.

Areas of potential disturbance, with the exception of the bridge work, will not be known until final design, and so the extent of the potential impacts is unclear. The recommended station sites generally are considered potentially significant for archaeological resources; all interim station locations, including Millbury station sites (Route 122, and Route 20), Grafton, Westborough, Southborough, and Ashland are identified for further study.

The DEIR has also recommended a complete architectural survey; however, the recommendations for the work on historical bridge structures remain unclear. This should be addressed in the FEIR. 28 I concur with the suggestions of the Massachusetts Historical Commission (MHC) as to how and when to proceed with surveys and more advanced investigations, and what information should beprovided in the FEIR. 29

Drainage

The FEIR should provide more detailed information about the required culvert repair work and any new drainage outlets which will result in wetlands impacts. 30 Commitments to the maintenance of the storm drainage system should also be made in the FEIR. 31 What specific measures are needed for the oil drip pans and separators, such as those described for the layover facility (p. 9-11)? 32 Although the description of the systems appears to suggest that these may not be the typical oil separators, the degree of effectiveness has not been predicted.

Station by Station Comments

The following discussion of station impacts is a summary of some of the salient points raised in the comments listed below. I note that comments like those submitted on behalf of the Town of Westborough cannot be easily summarized; as provided in the MEPA regulations, those comments nonetheless require a response in the FEIR. 33 In addition, the Draft Section 61 Finding in the FEIR should itemize the proposed mitigation measures by station location. 34

Many favorable comments were received for the Southborough station proposal. The Westborough station site appears to be the most controversial, based on the number of issues raised. Many comments advocated for the development of a more regional station, in order to eliminate the localized impacts on some municipalities, particularly the impacts in the Towns of Westborough and Southborough.

The CAC and several commenters have concerns that traffic will be diverted and impacts worsened if adjacent stations are not developed within the same timeframe. 35 This issue needs to be considered in the FEIR.

Agricultural impacts may result indirectly from growth that is induced by expanded commuter rail service. As requested in the comment from the Department of Food and Agriculture, mitigation off-sets for indirect farmland impacts should be considered in the FEIR. According to that agency, several commuter rail stations have the potential to provide marketing opportunities for local farmers. 36

Bicycle and pedestrian accessibility to and from the proposed stations is an important issue; amenities such as sidewalks, bike paths, lockers, and good travel routes to the station need attention in the FEIR. 37

Ashland - The CAC comment raises important issues concerning platform alignments and parking availability that need further evaluation. 38

It appears that the south parking lot access at Route 135 will have a significant impact. The Town of Ashland has recommended widening for designated turn lanes and signalization for safety. This should be evaluated in the FEIR. There are also concerns with the intersections in Ashland that are at levels of service (LOS) D/F. Mitigation measures for these locations should also be considered. 39 40

The MetroWest comment supports the east alternative, chosen by Ashland Selectmen because it has the potential to improve the waste site cleanup area, opens areas for commercial and industrial development, has minimal wetland impact, and avoids a grade crossing for some commuters.

There is also comment in support of the Ashland west alternative which indicates that the traffic and noise impacts would be lower and that at grade crossings would be shorter in length. Furthermore, the west alternative avoids potential delays with the Nyanza waste site cleanup. This alternative has the potential for localized business impacts, according to the comment from Daniel Giargiari, which should be addressed in response to the concerns raised.

Millbury - The CAC comment questions some traffic assumptions and results that should be reconsidered in the FEIR. In addition, a drainage system maintenance plan and commitments to fulfill the requirements of the plan need to be clarified in the FEIR. 41 42

More traffic mitigation may be needed at Route 122/20, according to commenters, and land taking is a concern. The access road from Route 20 could be developed so as to encourage economic development.

Bicycling and pedestrian access options should be pursued, and a commenter notes that the Route 122 station location is preferable because it is accessible to pedestrians and by bicycle. 43

Southborough - Commenters indicate that the pedestrian overpass is aesthetically out of character with the neighborhood. As an alternative, reactivation of the existing underpass has been proposed. The compatibility of the station design in the rural business district needs to be shown in the FEIR. 44

Some have solicited a commitment that a garage will not be built at the proposed Southborough Station and the reservation of 90 spaces on north side for residents only is controversial.

As expected, there are traffic concerns and impacts on the residential character of the area. Closure of the median on Route 9 at Woodland Road has been reported to be held up because of the EIR review for the commuter rail project. It is not clear why this is so. Furthermore, the CAC comment recommends that the proposed signal timing changes at Route 85/Southville Road be reviewed because this measure may not be sufficient to mitigate the traffic impacts. 45 46

Westborough - Historical properties have been overlooked according to the comment from the Westborough Historical Commission. Furthermore, archaeological survey data has not yet been provided to the Town or the Massachusetts Historical Commission.

Neighbors have raised concerns about noise impacts on homes and the neighborhood that deserve attention in the FEIR. 47

There are also concerns with the safety of children who walk on Fisher Street during commuter rush hours.. Sidewalks are in poor condition or non-existent; however, according to the CAC, plans for sidewalks are being developed.

Traffic volumes on Milk to Maynard Streets should be higher than indicated in the DEIR, and volumes on Fisher Street appear to be too low also. The traffic assumptions have been questioned 48

by the CAC, the Town of Westborough municipal agencies and the MBTA Advisory Committee. Background growth does not appear to have been fully accounted for in the study and commuter route distribution has been questioned.

The roadway improvements at the Route 9/Otis Street intersection may not make this the preferred route to the station. A route from Milk Street to Fisher Street, and then to Smith Valve would be more direct, based on comments. Safety issues at the key intersections have not been addressed to the satisfaction of commenters. Streets such as Arch Street are narrow and rural in character. However, these local streets have been impacted to a great degree by the development on Route 9 near Otis Street. These traffic and safety concerns warrant thoughtful consideration in the FEIR. 49

Grafton - A commenter sees an economic development potential being created in Central Massachusetts by the Grafton Station siting. A reverse commuting pattern could be established because of the linkage opportunity for biotech parks along the rail corridor. The traffic analysis should reconsider station traffic to Green Street in Shrewsbury. 50

Wellesley - The Town has raised a concern that no impact assessment of the 3 stations in Wellesley has been provided in the DEIR. The Town has specific safety concerns. 51

Boston - A comment has observed that the DEIR did not provide a study of the potential for a new station at Kenmore Square (Yawkey Way) and its connection to the urban ring. 52 The City of Boston has pointed out that additional information is needed to address pedestrian and platform issues at South Station. 53

Newton - The Department of Planning and Development has raised the concern that the basic and full build service may cause significant scheduling disruptions on existing services. This may be particularly so at the three stations in Newton because this is a single track service. 54

March 16, 1995
DATE

Trudy Coxe
Trudy Coxe

Comment Letter No. 2

CAC - Citizens Advisory Committee
Comments on
Draft Environmental Impact Report (DEIR)
EOEA # 9154

Introduction

The Citizen's Advisory Committee (CAC) has reviewed the Draft Environmental Impact Report (DEIR) submitted by the MBTA for the Worcester Rail Extension Project, and submits the following comments to accompany the DEIR' being submitted to the Executive Office of Environmental Affairs (EOEA) for public review and comment.

The CAC's comments follow the organization of the DEIR, prefaced by a few general policy comments. The headings in boldface type correspond to the headings in the DEIR, and as an aid in matching comments and text.

The CAC plans to comment further during the sixty day public review period.

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EDWARDS AND KELCEY
BOSTON, MASS.

CAC - Citizens Advisory Committee
Comments on
Draft Environmental Impact Report (DEIR)
EOEA # 9154

General Policy Statements of the CAC

GP1 Sec 17.0

CAC wants to be on record, that the now documented interrelationship among station sites requires that a minimum of Ashland, Southborough and Westborough stations open simultaneously (i.e. no more than 90 to 120 days between station openings). FEIR should make a commitment to this schedule *or* provide full disclosure of their station schedule and do full analysis of traffic, noise, etc. impacts for any station brought on line before the others. The host community should retain the right of refusal to bear these impacts albeit temporary. 1

The Certificate permits MBTA to segment each station's FEIR. However, the CAC believes that the DEIR documented interrelationships of Ashland, Southborough and Westborough clearly requires one FEIR covering these three communities.

Due to this high degree of interdependence, we urge the Secretary to scope the upcoming FEIR accordingly. 2

GP2

Assessment issues have been an ongoing dispute between the communities and the MBTA during the ENF stage and then with the CAC throughout the development of two DEIRs. Despite assessments: being scoped; the CAC revisiting the issue and voting it to be germane to our discussions; and our providing a proposed work program for how to answer the assessment question; the MBTA still refuses to do more than cite the existing law. The CAC has decided we are at an impasse. The Secretary can decide whether to push this issue further in the FEIR. However, this action should not be interpreted as acquiescence on this issue. Several communities have clearly stated they need assessment assurances or they will not accept a station. 3

Failure to address the issue now may still result in environmentally feasible station locations being rejected by local leaders due to perceived financial risk.

GP3 Refer to ES-5

The CAC had difficulty in reviewing the MEPA draft because the normal process is to compare all alternatives to find the best, but it appears that this document only had to prove the project "not to be infeasible". The FEIR should address what level of analysis is being used to determine the feasibility of the alternatives contained in this DEIR versus other alternative transportation solutions. 4

Comment Letter No. 2

GP4 The Central Transportation Planning Staff's (CTPS) updated projection of ridership demand is now based on 1990 census data. One weakness which the CAC believes exists is under projecting demand from Holliston and the extent to which other MetroWest communities will grow. For instance the Westborough town planner indicates he has not been contacted by MBTA during the past 13 months regarding planned developments. CAC's knowledge of recent, rapid, building activities in this area suggest that ridership may increase more steeply than the projections indicate.

Were the CTPS projections done based upon overall Boston metro population or refined to reflect unique growth scenarios projected for those towns in this region? For instance, the projections below performed by MAPC for CTPS highlight this phenomenon.

	1990 - 2000	2000 - 2010
– Ashland:	32%	11%
– Marlborough:	10	3
– Southborough:	8	2
==> Boston Metro:	1%	-1%

CAC requests that CTPS review projections (this will likely require working with CMRPC) and with specific planning departments to consider building permit trends for the most current 36 months for Holliston, Hopkinton, Southborough, Westborough, Marlborough, Hudson, Ashland and Milford. Please provide CAC with an updated or confirmed projection based upon this review. 5

GP5 Pg. 15-40 MBTA should divert traffic to collectors as opposed to local streets. For instance: Southborough desires to close the Cordaville Road / River St. intersection to protect the neighborhood and decrease congestion at the North parking lot and General Store entrances. This may increase traffic flow at the River and Southville Roads, but that is where the problem should be handled on a State numbered road as opposed to a side street. Traffic signals should be altered to handle increased flow even if grading and drainage improvements are required. The MBTA is building the station and creating an impact. Sound planning principles dictate that traffic should be directed to a signalized intersection and away from densely settled residential neighborhood. 6

GP6 Tables 12.15 - 12.18 No performance indicators were presented in the level of service summaries for each station in accordance with EOTC/MEPA guidelines. Presentation of the performance indicators in the FEIR will assist reviewers in determining impacts to traffic operations which do not result in a change in level of service. It is important to understand which end of the "range" for a particular level of service a facility is or will be operating at. 7

GP7 ES-17 The DEIR measures traffic impact in terms of LOS decreases only. CAC believes *intensity and duration* of impacts are both issues. For instance, in Southborough, the DEIR clearly shows that the peak traffic hour will be extended by station's peak generator hours during both morning and evening. The timeframe nearly doubles in the evening and will be very disruptive in suburban and rural residential areas. 8

GP8 Install pedestrian gate system at grade preventing commuters from crossing tracks when train is approaching/departing. These may need to be designed so as to prevent people from darting under them in their rush to catch the train. These should be designed as an adequate substitute for the presently planned overpasses. 9

GP9 3.7 pg. 3-50 CAC requests that the proponent reconcile its mitigation policy to acknowledge that "breaking it" (e.g. an existing service or system) relates to the length of time the proponent is causing diminished service, as well as, the degree to which the proponent is diminishing these services. 10

GP10 The construction of the new access drives/driveways to the commuter parking lots at the rail stations should not create new intersection traffic problems. Thus the access drives on Rte 122, Megunko Road and River Street need further study in the FEIR. A 1996 LOS D for a new intersection is not acceptable. New construction should be designed to a higher standard, C or better. 11

GP11 The work planned for this Extension should in no way preclude the electrification of this line. In fact, electrification should be a goal. 12

Executive Summary Comments

ES-10 The summary asserts that "Without great trouble" the MBTA could put more trains on the Worcester commuter rail line to help meet 1999 Clean Air Act standards. Where will these additional cars and engines come from? How "quickly can they be deployed"? Is their cost included in the $34M price for rolling stock? 13

ES-11 Since the 800-ft. raised platforms are no longer required, the need for straight track station siting would seem to be greatly diminished. Could this allow for reconsideration of previously rejected sites? 14

ES-13 The mini-high platforms leave a gap between the platform and the train. Is this gap variable? What is the range of its size? Can a small child's foot get caught in it, or a high heel? 15

ES-15 The MBTA assessment formula splits all costs of overhead between express and local service. For costs that are not directly attributable to one or the other, the division is based on total express services costs vs. total local costs. In other words, as the express side of the ledger becomes fuller due to expansion, express service becomes more expensive in the assessment formula. 16

Comment Letter No. 2

ES-15 The first sentence is confusing. Are the Grafton sites privately or publicly owned? If they are privately owned, are the sites in the other towns publicly owned? This section of the DEIR should be more explicit and clarify this point since many readers may think their stations could ultimately become privately owned. (The CAC understands the land ownership status for each station, however we are already being questioned by people who have obtained advance copies of the DEIR). 17

ES-15 Although the number of vehicle miles traveled is down, the kinds of emissions being saved is not proportionally reduced. The first and worst part of the trip, cold start to warm-up, will still be taking place in the short drives to the stations. The longer, cleaner part is the part which is reduced. This issue also arose at the time the Program for Mass Transit was being developed. CAC understands that the CTPS can model the "cold start" factor into its air quality standards. Did the model for determining air quality benefit contain a factor which offsets the "cold starts"? 18

CIRC-5 Jody Young (who was the JRTC alternate) replaced Mary Snyder in the summer of 1993 when Ms. Snyder resigned from the CAC.

Section 1: Project Overview

Sec. 1.5 The statement that "The (Westborough MBTA Advisory) Committee expressed preference for the Smith Valve Parkway site" needs to be clarified. The Westborough MBTA Advisory Committee is charged to advise the Westborough Board of Selectmen, not the MBTA, and did not make the ultimate decision on preferred station location. The Westborough Board of Selectmen did not approve site selection at Smith Valve Parkway and has restated its position in support of a regional station somewhere in the vicinity of Interstate 495 and the Mass Pike. (This also refers to Section 11.5 Candidate Sites -- Westborough *Smith Valve Parkway* – pg. 11-12 "this site was selected by both the MBTA Advisory Committee and the MBTA"). 19

Sec 1.1 Pg. 1-3 How many would be additional trains? 20

Sec 1.3 Please correct table 1.3-3 since there are no spaces at the Newtonville stop. We question where MBTA obtained its numbers for parking spaces. Thus unavailability of parking does not deter 428 commuters from driving to this station and parking illegally -- challenging the constrained demand theory. 21

Sec 1.2 Pg. 1-9 and 3-47 "Authority cannot operate service outside district unless operating losses are reimbursed by some other entity."

What is the Worcester Regional Transit Authority (WRTA) role in this project? Is WRTA contributing funding since Worcester, Millbury, Grafton, Westborough, Southborough (five of the six communities on rail extension) fall into this district? We understand that WRTA is providing funding for Union Station, however, this doesn't affect these other towns. 22

Sec 1.3 Pg. 1-19 The CAC believes it is inadequate for the DEIR to say "Private bus ridership figures are not available as they are not public information." Real modal transportation figures are essential, since the direct comparison is actually between private, profit-making, bus services and the addition of a multi-million, subsidized commuter rail service. (Please refer the CAC comment on Sec 5.4.) 23

Sec 1.4 Pg. 1-32 The DEIR does not indicate how many bridges and underpasses east of Framingham have to be rebuilt. If Framingham is as far east as the double stacked cars will be able to go, how does that make the Port of Boston intermodal? Why are we analyzing the cost of double stacking and raising bridges *west* of Framingham if this DEIR states that the line will only be double stack to Boston? Is not the goal to double stack rail lines to Worcester? 24

Section 2: Needs Analysis

Sec 2.2 Also 5.2 We need more than the data provided to understand why this is the service area, especially since MBTA estimates that patrons for Worcester Extension will be drawn from 6 miles or fewer from the rail line and not from much further than 10 miles away. The model may need to run for a portion of the community (e.g. traffic zone or census tract) as opposed to entire population of communities (see figure 2.2-1). 25

For example, the study area includes the town of Milford as part of the cachement area for the Worcester Extension. Franklin is more accessible given the proximity to I-495. The travel time along Route 85 will be greater than the travel time along I-495. Justification for the Franklin extension to Forge Park, was in part based upon ridership from Milford. CAC requests that the proponent clarify whether ridership is been double-counted for this project – based upon the MBTA Forge Park project. 26

Sec 2.6 Same comments as 1-32 above re inconsistency with bridge raising/track lowering is discussed all along route to Worcester. Why does DEIR describe service only as far east as Framingham? 27

Section 3: Project Elements

3.2: Bicycle Access

Sec 3.2 [1a]Pg. 3-15 The recently enacted State Transportation Bond contains language requiring state transportation projects to consider how to make projects more suitable for bicycle use. Since it is proposed to defray the cost of this project with state funding, much more work will be needed in the FEIR to show how these stations will be multi-modal and in particular "bike friendly." 28

The CAC requests all roadway improvements create bike path lanes e.g. Southborough Station to Hopkinton State Park. FEIR should detail what the MBTA plans are for improved bike access to their stations. This would decrease traffic count and improve air quality. 29

Sec 3.2 Pg. 3-12 Who is paying for the reconstruction of the interim station? Is Worcester Regional Transit Authority paying for any of the cost? If so, how much? The CAC is under the impression through the December 1993 Notice of Project Change that MBTA is paying for this. Is this expense part of the $78 M for this project? Where does it factor into the total project cost and also into the cost / benefit analysis? 30

Sec 3.2 [2] (Figure 3.2-2) Site plans in DEIR fail to address bike usage on site or on train. The CAC requests bike lockers be considered at all stations. 31

Sec 3.3 Also 3.6 Tables 3.3-1 & 3.6-1 indicate that no bridge raising was analyzed east of Framingham.

The MBTA is proposing to lower tracks along the corridor to provide the capability for double-stack freight service in the corridor. The work is described as "not necessary for the Worcester Extension, but would eliminate future service disturbances if EOTC moves ahead now with its double-stack plans." EOTC's original double-stack plans were for the northern tier tracks used by the Fitchburg Commuter Rail service, and was designed to meet the re-use needs of Fort Devens. Conrail and others objected to this being included in the Transportation Bond Bill. The MBTA should not pay the cost of lowering tracks or raising bridges as part of this project. The DEIR states that this cost will be subsidized by the EOTC, however the financial section does not itemize this cost in a means that is identifiable. 32

Sec 3.4 [1A] Pg. 3-39 <u>Commuter Rail Train Schedules</u>

"Approximate train schedules..." The proposed Basic Service schedule fails for a number of reasons:

Sec 3.4 [1B] 1. Assuming four sets of equipment based in Worcester, trains 502A, 504A, 506, and 506A must be covered by trains based in Worcester because the first westbound (505) does not reach Worcester until 30 minutes after the departure of the fourth departure from Worcester. 33

Sec 3.4 [1C] 2. Assuming that 505 turns for 520, the schedule needs adjustment because 510 cannot depart at the same time 505 is arriving. A minimum of 10 minutes must be allowed to detrain and entrain passengers, task the crews to change ends, contact the dispatcher and make the legally mandated brake test before departure of 510.

Sec 3.4 [1D] 3. Following this logic, 509 must turn for 514. The equipment would sit idle in Worcester. Train 513 would turn for 518 and, again, would sit in Worcester for one hour.

Sec 3.4 [1E] 4. Train 520A is scheduled for a 5:20PM departure from Worcester. Unfortunately, there won't be a train set in Worcester until 5:35PM, when 515A arrives.

Sec 3.4 [1F] 5. Assuming the problem with 520A is a schedule glitch and 520A really will have equipment to run with, then the afternoon rush hour trains will start arriving. Train 519 and 521 will put their equipment away in Worcester because there is no schedule for them to return east.

Sec 3.4 [1G] 6. Train 521A will turn for 526. 523 must turn for 530 using the proposed schedule with a layover of one hour fifty minutes. More than likely, 523 will put away in Worcester and the schedules of 527 and 530 will be corrected to allow 527 to turn for 530. Train 531 would be the fourth set put away in Worcester at night.

33

Sec 3.4 [1H] 7. Train 505 will have to turn for 512 after sitting in Worcester for an hour and ten minutes. In fact 507 will have arrived before 512 leaves and two sets will be sitting in Worcester. 507's equipment will have a two and one-half hour layover waiting for 514's schedule. This is problematic from both equipment and crew scheduling perspectives.

Some may suggest shutting down the train set while it sits in Worcester. This is unlikely to occur because of the required time and tests that must be made after a set is restarted. Further, where does the crew wait during the layover? Moving the equipment to the layover facility would work, but by the time the necessary switching moves were made, it would almost be time to board passengers. These scheduling problems must be addressed in the FEIR.

Sec 3.4 [1J] It should be noted that at all MBTA points outside of Boston operating crews report 45 minutes to one hour before scheduled train departures. This equipment must be up and running by that time to ensure that everything is in working order. Mechanical inspections and tests are completed before time to allow for repairs or to get a replacement set (when practical) started or out of Boston to replace a train that may fail any of the federally mandated tests. (Each train must pass such tests before going into service each day).

Sec 3.4 [1L] Conclusion:

It would appear that adjusting the schedule to make it work is a simple matter. That is not the case. Every adjustment to either an inbound or outbound train affects the opposite direction train because the same set of equipment makes both an inbound and outbound trip. Therefore, multiple schedules have to be changed. This then puts the MBTA in the position of trying to determine whether inbound or outbound service in a given time frame has to be changed.

Sec 3.4 Pg. 3-39 This clearly states that Interim Service will not address Reverse Commuting or Weekend Service; then when DEIR discusses basic and expanded service it is silent on both topics:

a) Reverse commute - the schedules provide for it and the chart clearly indicates that the towns have people who work in Worcester. However, no ridership or air quality credits

are taken for all these outbound stops in the a.m. or inbound stops in the p.m. The FEIR must calculate Feasibility and Ridership for reverse commute. It must also recalculate cost and air quality benefits if in fact there is additional ridership. 34

b) Weekend Service - Will there be weekend service as originally promised, under Basic Service? 35

Sec 3.4 Pg. 3-39 to 3-46 It has been emphasized that in order to get people out of the convenience of their cars, public transportation must be competitive with respect to both time and cost. It should also be reliable, clean and comfortable. Interim Service has been running on time in the morning and taking 60-70 minutes to get into Boston.

What will the timing impacts be as each station is added to the schedule? Buses and cars take 60-70 minutes from Worcester now and it gets respectively shorter for each town as you go east. Will the Basic Service still take only 60-70 minutes to get to Boston when the limited Interim Service presently takes 60-70 minutes. 36

Have there been problems with the Interim Service evening trains? CAC members who investigated were told trains can be up to 24 minutes late in the evening. As verification, the buses that are nearly empty in the morning started to pick up evening ridership as commuters learned the ride home was not time competitive. The FEIR should address all of these scheduling issues. 37

Sec 3.4 Pg. 3-43 to 3-46 If not included already, please include complete schedules for east of Framingham under the operation of Worcester Extension. The draft provided the CAC did not contain this data, and therefore, it was impossible to determine if new service has an impact on existing service (e.g. changes to station arrival time or deletion of an existing stop or stops). 38

Sec 3.6 <u>Relationship to Transportation Improvement Program Funding</u>

The report claims that the Worcester Extension. is an element of the state TIP. Since state TIP must be exactly the same as the regional TIP, this statement is inaccurate. The MBTA did not place its non-federal aid projects in the regional TIP. The TIP should not be used as one of the justifications for the project. 39

Sec 3.6 Pg. 3-16 The cost estimates in the DEIR do not necessarily cover off-site mitigation such as sidewalks, traffic signals, intersection/roadway widenings and resurfacings. The FEIR should address what mitigation will be paid for with the $78 M budget and what will require other funding and from whom. It then should again address availability and timing of funding. <u>All mitigation must be completed prior to the opening of each station respectively.</u> 40

Sec 3.6 Pg. 3-47

Financial Feasibility

1. The MBTA financial analysis suggests that this service will have a cost recovery ratio of 42% and notes this exceeds the 35% goal set for MBTA services. The report does not suggest where the remaining 58% of the operating budget will come from. Given that the existing MBTA operating budget is funded at $40 million less than in fiscal '94, the level of transit service that is currently operating is greatly restricted by available funds. The CAC is concerned about where the proposed $7 million subsidy will come from without additional funding resources which do not appear forthcoming. While the $7 million operating deficit increase may seem small in terms of the total MBTA budget, since the MBTA's operation is decreasing, its new services will require reductions in other MBTA services in order to be accommodated. In addition, the per passenger subsidy of about $2.50 exceeds per passenger subsidies for even the poorest producing bus routes within the MBTA district. 41

2. Before retiring from MBTA, Jerry Kennedy provided the CAC with cost recovery figures for this line. Presently the Framingham line has a great 64% cost recovery ratio. This drops to 42% with the extension, because Framingham to Worcester has only a 19% recovery ratio. The FEIR needs to break these numbers out better and explain if we are increasing or decreasing our cost recovery. The proponent also needs to explain what the specific implications are for the MBTA budget. 42

3. Since the possibility exists that the actual level of service will be closer to "basic" than to "extended", there should be a separate revenue / cost analysis for each service level. 43

Sec 3.6 Pg. 3-47 The standard that the MBTA Advisory Board and other independent review committees use is the ratio of Fare to the Net Operating Costs. This is consistent with the industry standard (for comparison with other systems) and is the historic standard of the MBTA (to compare its own improvement or lack thereof). It is commonly referred to as the FRR, the fare recovery ratio.

Sec 3.7 Pg. 3-50 The annualized capital cost figures assume a no interest bond or loan. Interest costs would conservatively double the annual capital interest expense budget. The 1990 Feasibility Study showed the OMB method for "annualizing" capital costs and suggested 10% of the total. This would result in an annualized capital cost of $9.7 million – not the $3.3 million shown in the DEIR. (please also see page 4-12).

Please explain and detail the financing method and cost breakdowns in an amortized schedule (and correct associated tables). 44

Section 4: Alternatives Analysis

45

Sec 4.1 Pg. 4-6 CAC requests the proponent to provide a model for bus ridership, with the bus subsidized at the same rate as is proposed for the Worcester Commuter Rail extension.

Comment Letter No. 2

Sec 4.1 Pg. 4-8 What year were these projections for? 46

Sec 4.4 Pg. 4-16 How did they reach this conclusion? Clearly the bus will carry more passengers at no cost to the public, and will cause less pollution than the train. In fact, the state makes money by taxing Peter Pan's profit. The CAC believes the DEP will allow a substitute project in the same corridor, and HOV express buses certainly qualify. The FEIR must address alternative selection more cogently and cite specific criteria. This is a prime example of project selection on the basis of "not being infeasible" rather than the project providing an "optimal" solution. 47

Sec 5

Section 5: Ridership, Regional Traffic & Air Quality

Sec 5.3 Table 5.3-2 and pg. 17-3 CAC is concerned that any town (particularly Ashland) might be looked upon to provide more than its share of the burden for rail services. These concerns have been validated in the most recent DEIR. Although we maintain this concern, we do appreciate the direct and authoritative manner in which the reality is described in the DEIR. Specifically, the DEIR indicates
" ....Ashland would more realistically become ..... the defacto regional station.." This is an unacceptable burden for Ashland.

Ashland has clearly stated to MBTA that failure of a site to be located in Southborough would negate any interest on Ashland's part for accepting a station. Furthermore, an Ashland station must come on-line no sooner than a Southborough station.

Southborough from the outset has been watching the response of Westborough to hosting a commuter rail station, and assessing the impact on Southborough's traffic if no station occurred in either Ashland or Westborough.

Sec 5.3 Also 17.2 Table 5.3-1 CAC acknowledges that individual communities need to carry some of the burden of providing rail service for neighboring communities.

Sec 5.3 Pg. 5-4 This DEIR was submitted to the CAC for pre-review just a week and half before Interim Service started. It would be helpful for the CAC members if the FEIR had a section discussing the first month of Interim Service. We are particularly interested in the accuracy of the ridership projections for Interim Service versus actual counts. At one point in our CAC meetings, upon questioning consultants said any ridership projections can be off by as much as 20%. Small towns which are already predicted to have higher ridership than the second largest city in New England are understandably worried that the projections could be underestimating demand. This report on Interim Service could also provide other data such as impact on ridership when free parking became for-a-fee parking, noise problems, parking problems, cachement area of Worcester Interim Station, and whether schedule worked for both a.m. and p.m. routes. 48

Sec 5.3 Pg. 5-8 The DEIR does not address the potential impact on existing bus service in enough depth. The CAC has had numerous discussions around the issue. The first draft which was withdrawn clearly indicated that the Worcester ridership will come off the Peter Pan buses as opposed to single occupant automobiles. 49

Reports to the CAC since Interim Service began appear to bear out that projection. Buses that were running full in early September now have as few as 10 passengers. At a CAC meeting we were told that there would need to be a 13c Agreement between the private carriers and the MBTA because public expenditures would negatively impact their businesses. The CAC had asked that these agreements be addressed in the DEIR. Since they have not been, the FEIR should address their need, and if found to be necessary, how public funds will be committed in these agreements. Should not these financial agreements (if entered into) be added to the cost of the project? 50

Sec 5.4

Existing Ridership in the Corridor on Public Transit

Sec 5.4 Pg. 5-8 The CAC was able to get ridership data from the Gulbankian bus by simply calling and asking them. Therefore, we do not accept the assertion in the DEIR that they could not obtain reliable private bus ridership counts because it is proprietary information. These figures should be better documented in the FEIR and the comparisons between bus and commuter rail analysis recalculated. Sources for this data include: 51

- phone surveys of transportation companies
- DPU route documentation filed by the private carriers
- individuals riding the routes and counting numbers of passengers boarding at each stop within the 28 community service area.

Underestimating existing transit ridership will overestimate air quality benefits of the Worcester Extension.

Sec 5.5 Pg. 5-15 Wouldn't the increased speed on the Turnpike credit also apply to an expanded (or even subsidized) bus service? 52

Sec 5.5 Pg. 5-16 Assuming 5-15 is true, please include the reduction here. 53

Section 6: Socio-Economic Impacts

6Sec 6.4 As part of the scope of the EIR and the special procedure, financial analysis of the rail extension is considered. Under the present guidelines and revenue / cost projections, Ashland assessment would increase nominally with the inception of rail service. Ashland is the only community on the Worcester extension being assessed. Legislation has been passed, though not enacted, that would exempt Ashland from being the only community on this extension which would be assessed under the present formula. The CAC supports Ashland in it's requests in not becoming the only community which would be adversely affected in its budget with inception of rail services.

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Sec 6.4	Pg. 6-7-10	Assessments: Most members of the CAC disagree with the MBTA's statements concerning the likelihood of legislative reform of the MBTA district and its formula for assessments. The Boston Globe reports that a legislative subcommittee of the Joint Regional Transportation Committee has set an April 1995 deadline for developing a more equitable funding system. If the legislative commission revised guidelines in this timeframe, a new formula could be in place by fiscal 1996. For example, the Westborough station, projected to be used by only 22 Westborough riders out of a total ridership of 216 (Table 14.1-4, pg. 14-8), does not offer a great benefit to the town when weighed against potential costs for future MBTA assessments.	54
Sec 6.4	Pg. 6.8	A cap was placed on the reimbursement in 1983, so the refund to communities is getting steadily smaller. It is difficult to find this because there is no separate item on the "cherry sheet."	55
Sec 6.4	Pg. 6-9	Should show the Fare Recovery Ratio, as explained above.	56
Sec 6.5		Please define "equalized valuations for the prospective station site communities".	57
Sec 6-6	[2]	Same as 6-5 [1]	

Section 7: Environmental Impacts - Railroad Right of Way

Sec 7.11		Safety mitigation at West Natick, Wellesley Hills and Wellesley Farms is not addressed anywhere in this document. Even prior to the introduction of interim service, Amtrak, ConRail and several MBTA commuter rail trains passed through these stations at high speeds. All three stations require patrons to cross rail tracks to board or leave the train. Two of the three are also sited on curves, limiting visibility of approaching trains. The addition of 8 to 10 express trains per day will exacerbate this situation. Several improvements are suggested: 1. Better signage: -The current sign "Be Aware of Fast Moving Trains" is not a sufficient warning. - Identifying which trains, by train number, board on the outbound track is almost useless; more relevant information would be time of departure, for example (5:33 PM to Boston). 2. Pedestrian crossovers at both Wellesley stops and West Natick could be incorporated onto nearby road bridges without major construction.	58
Sec 7.3	Fig. 7.3-1	This chart provides three different thresholds used to determine unacceptable levels of noise impacts. Which agency, if any, has the legal authority to superimpose their standard on the others? What is the purpose of this chart in the DEIR? Are you using EPA standards or are you using Federal Transportation Administration (FTA) standards as stated on p. 7-15? If you are using FTA criteria, why are they not shown in Figure 7.3-1?	59

Sec 7.3 Fig. 7.3-1 Federal agencies use different terms for what the CAC believes are the same intent. On the chart HUD speaks of "housing environment" while EPA addresses "ideal residential goal." Are these interchangeable terms, or do they mean different things to the two different bureaucracies? 60

Sec 7.3 Pg. 7-12 The CAC does not agree that noise and vibration impact should only be calculated for residential uses. For example, Southborough still wants Fitzgerald's Store and Ipanema Restaurant assessed for noise and vibration impact both during construction and normal train operations. They are the properties closest to the proposed train stop. Ashland, Westborough and Millbury also have commercial uses very close to their stations. We ask that this be reviewed. 61

Sec 7.3 Pg. 7-18 Ashland has two senior citizen housing facilities adjacent to railcrossings. Grafton also has rail crossing traffic which will increase by 100% under this service. There are specific concerns with the analysis of noise / vibration and wish to see further clarification of the mitigation for these impacts. 62

CAC requests the MBTA, by it's generation of a nearly 100% increase in Ashland's and Grafton's rail crossings provide, in close coordination with ConRail, relief from locomotive horn blasts by installing a stationary horn (or other suitable technology) for rail crossing warnings. 63

Sec 7.3 Table 7.3-1 On pg. 7-15 the DEIR states that FTA criteria determine impacts based on existing ambient noise levels. If you have a quiet area with ambient noise of 42 dBA, you can add as much as 10 dBA with no impact, but if it is noisy (i.e. 70 dBA) you can only add 1 dBA before you have an impact. Assuming this is all correct, then the MBTA should explain Table 7.3-1 Train Noise Impact Assessment at station locations. For example, Grafton has an existing dBA of 70. The standard explained above is that you can add 1 dBA to a 70 dBA with no impact. If you have an impact then the MBTA should mitigate. Yet Table 7.3-1 goes on to indicate they predict they will add 2 dBA with no impact.

Which information is correct – the 1 dBA limit stated on page 7-15 or the 3 dBA limit found in Table 7.3-1? It would appear that there are impacts in Grafton to which the MBTA is not admitting. 64

Sec 7.3 Table 7.3-2 The CAC shares Grafton's concern about the degree of noise impact they might incur. It was unclear how Table 7.3-1 says there are no impacts (albeit this is challenged in the above comment), and Table 7.3-2 then states 6 residences are impacted with Basic Service and this jumps to 26 units with Expanded Service.

There is not enough explanation in the DEIR to make this understandable to the average reader. The FEIR should clearly explain and elaborate on these sound impacts in all of the towns. Data should not be buried in the appendix which requires a level of expertise not possessed by the average reader from the impacted communities. FEIR should do this work for the reader in an easily understood manner. 65

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Section 7.3: Noise and Vibration

Sec 7.3 [2] Figure 7.3-2 DEIR plots a graph showing MBTA and Conrail locomotives creating higher noise level than AMTRAK locomotives. The logic appears faulty for two reasons. First, approximately 17 locomotives of the AMTRAK fleet are exactly the same type of engine that AMTRAK uses to haul its trains in the area under discussion; the F40PH engine. These locomotive engines run at a constant maximum RPM to provide electrical power to the coaches, in addition to providing propelling power to the wheels.

Second, MBTA has other types of locomotives known as F40PH-C class engines. These units have a separate donkey engine that supplies power to the coaches. The main engine is used exclusively for propelling power. As a result, the RPM's of the main engine are determined exclusively by the position of the throttle, the same as on Conrail's freight engines.

It is very difficult to believe that variable speed engines (which will not be in the higher throttle positions all the time in passenger service) generates louder sound levels than an engine which runs constantly at the maximum RPM possible. Interestingly, the dual engine locomotives are described on page 9-7 and it is clearly implied that such engines are quieter. Further, see Figure 9.3-1 on page 9-9 for what *appears* to be data in conflict with Figure 7-3.2.

These measurements may overstate the baseline noise dB levels which may result in a smaller increase from this baseline as service increases. Grafton and Westborough measurements will be actually higher, since the semi-enclosed environment (given the density of buildings adjacent to the tracks) produces more reverberation of train sounds. 66

Sec 7.8 CAC is awaiting comments of FEIR regarding historical issues before offering detailed comments.

Section 9: Environmental Impacts - Layover Facility

Sec 9.3 [1] Noise impacts from Layover Facility Operations

Sec 9.3 [2] CAC requires additional information in the FEIR regarding noise impacts at the Layover Facility. The assumptions outlined in the first full paragraph on page 9-7 created confusion for many CAC members. It would seem impossible to start a locomotive up, run all of the required tests, move the equipment from the layover facility to the originating station, board passengers and depart in 45 minutes — at least not at the Worcester location because of the make-up of the operation. Trains do not go into service from the layover facility. They move to their originating station and sit there idling while commuters board. The paragraph is misleading. FEIR must clarify this issue. 67

Further, after all of the required tests are completed on equipment which has been started, the equipment would move from the layover facility east to a point in the general area between CP43 and MP 44 onto the main line.. The crew would change ends, make a brake test, get permission from the dispatcher to reverse direction west on the main line without signal indication, proceed west to Worcester station and reverse the process just described for the scheduled departure east from Worcester. Time is also spent boarding passengers who tend to "dribble in" a few at a time prior to departure time.

Due to the scheduling inaccuracies indicated, the FEIR should consider the likelihood of as many as three or more engine sets idling simultaneously over longer periods. Peak generation of noise is actually greater than the DEIR indicates. We ask that re-projections of noise and emissions be recalculated. 68

Assuming it takes one half-hour to make the moves from the layover facility to the station, and a 45 minute start-up and inspection period (which we are told is below the Federal Railroad Administration average for an entire train set), the idling time in the immediate vicinity of the facility and the surrounding area is <u>at least</u> an hour and fifteen minutes, probably longer <u>per set.</u>

If two of the sets are the F40PH (not F40PH-C) class, there are then two engines idling at 900 RPMs each, in addition to any noise generated by the other equipment in the area.

The argument has been made that only F40PH-C units will be sent to Worcester to mitigate the noise problem. However, the second day of Interim Service saw the introduction of the F40PH to Worcester. The third day saw the noise complaints on the front page of the Worcester paper, complete with pictures. This must be resolved in the FEIR. 69

The "peak idling period" is directly tied to the schedule, since the schedule determines when equipment must be started. Please see our comments above on the schedule and need for fine tuning of this schedule. If the schedule(s) included in the DEIR are adopted, noise in the immediate vicinity of the facility will be increased throughout the day by idling equipment waiting to make its scheduled turn back to Boston.

Sec 9.3 [3] The "peak idling period" is directly tied to the schedule, since the schedule determines when equipment must be started. Please see our comments above on the schedule and need for fine tuning of this schedule. If the schedule(s) included in the DEIR are adopted, noise in the immediate vicinity of the facility will be increased throughout the day by idling equipment waiting to make its scheduled turn back to Boston.

CAC requests that noise mitigation take place or the facility will simply become the subject of unending complaints. 70

Sec 9.3 [4] Pg. 9-10 Under the heading "Noise", second paragraph, one of the "measures to minimize noise impacts..." is "(3) an active community liaison program." The CAC points out that the best liaison in the world simply cannot mitigate the way equipment is engineered.

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Section 11: Alternative Commuter Rail Station Sites / Design

Sec 11.0 Pg. 11-11 The DEIR states that "While a regional station is still a long term goal, the MBTA decided to concentrate efforts on extension of service to Worcester and leave the detailed planning for a regional station for another project to be scheduled at a future date."

The CAC disagrees. The site of a regional station should be settled – prior to the construction of local stations. This CAC, the Westborough Board of Selectmen, Southborough Board of Selectmen, Westborough / Northborough Area Chamber of Commerce and the Westborough Rail Advisory Committee all strongly support the undertaking of a thorough feasibility study of an I-495 regional station as proposed in the Transportation Bond Bill. This study needs to be conducted before a decision is made on the need for local stations or their siting. Construction schedule and costs should be included in this study, as well as, further alternative siting combinations. 71

Section 12: Environmental Impacts - Millbury

Sec 12 Fig. 12.1-4 It is surprising to see no traffic accessing the station from the Mass Pike. CAC would expect riders from Charlton to arrive on the Mass Pike, as well as riders originating from communities west of Charlton, which may have been underestimated. 72

Sec 12 Table 12.1-5 and 12.1-8 The majority of the intersections studied for this station are located in Worcester, however, there is no mention of contact with the Worcester Police Department regarding accident history. 73

Sec 12.1 Pg. 12-14 The Route 146 / Mass Pike Interchange FEIS/FEIR shows a reduction in traffic volumes of approximately 20% on Route 20 west of Route 122 and 25% on Route 122 north of Interchange 11 with the proposed project, however the traffic analysis does not reflect this condition. 74

Sec 12.1 Pg. 12-14 The 1994 No-Build traffic volumes presented in the Route 146 / Mass Pike Interchange FEIS/FEIR on study roadways are significantly higher than those used for the 1996 traffic analysis. This should be explained. 75

Section 14: Environmental Impacts - Westborough

Sec 14.1 The CAC acknowledges there are specific questions pertaining to the traffic dispersion model (and how it was applied) at this Westborough site, specifically the traffic projections for Fisher and Maynard Streets. MBTA officials should work closely with Westborough to reconsider the assumptions in the traffic model and to re-run this model if necessary (e.g. conduct traffic counts at Maynard St. / Rt. 135). 76

Sec 14.11 — The CAC has received an update from MBTA stating that Westborough and Southborough will now have sidewalks, however the location of these is uncertain. The FEIR should state where these sidewalks will be located, the number of linear feet and any increases in site development budgets. **77**

Sec 14.2 Pg. 14-26 — Based upon recalibration of the traffic model (as described above), if traffic increases are shown to occur on Fisher and Maynard Streets, then air quality tests should be performed for residences and the schools along Fisher Street, due to vehicles using this area as a shortcut to reach Smith Valve station. **78**

Section 15: Environmental Impacts - Southborough

Sec 15.6 [1] — Issues Scoped but not Addressed

Pg. 15-33 & 34 — The scope for the DEIR told the MBTA to address how the Southborough station should fit into the character of the rural village business district, and how the granite bridge would be maintained as a gateway to Southborough. Neither issue is covered at all in this DEIR. Both needs detailed discussion in the FEIR. **79**

Sec 15.1 Pg. 15-11 — CAC does not agree with the DEIR projection that 50% of the Upton train riders already use Southborough as their route to the Mass Pike. To save time, Upton uses I-495 to the 11a entrance to Mass Pike. Traffic impacts resulting directly from the station should be adjusted upward in the FEIR. **80**

Sec 15.5 Pg. 15-33 — Based on its field trip to all proposed station sites, the CAC supports a recreation and landscaping project for Mill Pond, the Sudbury River and Stone Arch Bridge in Southborough. However, the DEIR-gives no more than a couple of sentences to this topic. The FEIR should offer more detail. **81**

Sec 15.10 Pg. 15-38 — It has been agreed that sidewalks will be built in the proximity of Southborough Station, as well as on, the station site. This station has a high potential to service Hopkinton State Park. Thus, the sidewalks exiting onto Route 85 at the new access driveway should provide crosswalks to get park users on the right side of Route 85. The crosswalks may also need pedestrian lights to assist safe crossings during peak hours. **82**

Sec 15.12 Pg. 15-22 — CAC supports Southborough in strongly disagreeing with the supposition that traffic problems at the Route 85 / Southville Rd intersection can be remedied by merely retiming existing traffic signal. Instead of debating this, CAC requests that the MBTA petition MHD District 3 *now* to retime these lights, and then conduct additional, comparative analysis in the FEIR. Since the Route 85 bridge has been closed, traffic patterns have changed. MBTA should coordinate with Southborough how the address this issue in the recommended signal timing experiment. **83**

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Section 16: Environmental Impacts - Ashland

Sec 16.0 Fig. 16.0-1

Off set boarding platforms...

The problem is that the platforms are offset from each other on their respective tracks as much as 700 to 800 feet. We already know that both tracks will be signaled for use in both directions, therefore trains may operate on either track. The majority of the time, the same track will be used. However, there are commuter trains, AMTRAK trains, Conrail's freight trains to be considered and the Westborough rail / Auto Yard at MP30 off track #1. All of these will play a factor in the dispatcher's decision as to which track to route a train to on any given day.

Assume the passengers have all gathered to board on either of the platforms and the train is routed to the other track. Now, passengers must walk the length of either platform to get their train. This is time-consuming process for the able-bodied. It will be longer for the chair-bound especially since they only have 45 feet of platform space available to them and it is at the exact opposite ends from one another.

We strongly recommend that this style of platform alignment not be adopted, or that the offset distance be reduced. In re-routed situations, passenger track crossings could delay trains for 5 to 7 minutes, or more if there are handicapped passenger.

Sec 16 Fig. 16.0-2

DEIR shows 200 parking space capacity in Ashland, on the North side of tracks. Parking spillover is likely. Thus, the town would resort to restricted on-street parking between certain hours and also implement a "tag and tow" policy for controlling any parking lot spillover. The CAC requests a reevaluation of the proposed 200 parking spaces on the north side of the tracks. 84

Sec 16.1

Ashland understands the challenges associated with development of this alternative and firmly believes that coordinated remediation of this property can be a win - win situation for the EPA and MBTA. This would require close coordination with EPA and Mass DEP.

Sec 16.1

The proposed Ashland West alternative is shown to have floodplain and some wetland. One potential solution is to break up the parcel into smaller "dry" parking lots (similar to West Natick) to avoid any wetland impact. 85

Sec 16.13 Pg. 16-51

Traffic approach and dispersion for the Ashland West alternative is somewhat problematic, given current road and bridge configuration at Pleasant & High St. How does the proponent plan to address this? 86

Sec 16.13	Table 16.1-8 & 16.1-14	The proposed access road to either East or West alternative from Route 135 would require signalization / integration with existing Route 135 signals. This must be addressed in the FEIR.	87
Sec 16.1	Pg. 16-48 & 58	CAC has a policy statement that sidewalks would be required at all rail stations to link them to pedestrians. Under the "west" alternative, DEIR does not indicate that Ashland needs them for access across the Cordaville Rd./ Pleasant St. bridge and as appropriate elsewhere.	88
Sec 16.17	Pg. 16-56	The DEIR and MBTA acknowledge the existence of floodplain, wetlands and sensitive areas on the proposed western alternative Ashland site. A site redesign may potentially avoid wetland impact.	
		We reguest MBTA consider breaking the proposed south lot into parcels (much like the west Natick MBTA lot).	89

Section 17: Regional Station Analysis

Sec 17. [0]

Sequencing /Timing Issues

This is an inadequate analysis of the regional station option, because it pre-supposes that all local stations are built prior to the regional station. Their market share is then slightly redistributed when the regional station is built, resulting in a low ridership and a "not cost feasible" determination. MBTA misses entirely the local viewpoint. We want a regional station instead of local stations. Do not build local stations by 1996 – but rather put regional station on-line, then smaller stations if needed, e.g. Ashland. Southborough and Westborough would use the regional station.

Undoubtedly, the ACEC status of Cedar Swamp presents a problem for siting a regional station but positive, creative solutions may yet be found if really desired. The FEIR should continue to look at regional station option and not drop the topic as proposed in the DEIR. A conservative estimate of ridership totaling 1,290 patrons boarding at I-495 cannot be ignored. This number is conservative because it was obtained by running the 28 community cachement area model as opposed to looking at additional riders coming from the south, north, and west along I-495 and Mass Pike to get to Boston. 90

Sec 17.2	Pg. 17-3	"No specific ridership estimates were prepared for an alternative in which a regional station and all other intermediate stations except Westborough were constructed." The CAC had requested projection without Westborough and Southborough, at their meeting with the MBTA and its consultants on May 29, 1994. MBTA has told the CAC that it has the capabilities to develop this scenario. These omissions should be included in the FEIR.	91

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See 17.0		"A recent MBTA number plate survey in the parking lots of its Framingham terminus and other stations within the I-495 belt confirms that a significant patronage from central Massachusetts exists already. The demand can only increase with a Worcester boarding option." TELEGRAM & GAZETTE, September 15, 1994 -- " "An I-495 Regional Station."	
App I	Pg. 1-308-9	Information regarding Fountainhead Plaza project is erroneous and out of date. Permits have been obtained for construction of a WalMart at that location. This project is progressing and it is reasonable to expect that it would be completed by late 1996. The WalMart project needs to be included in both the 2001 and 1996 "No Build" traffic projections.	92

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection
Central Regional Office

William F. Weld
Governor
Trudy Coxe
Secretary, EOEA
Thomas B. Powers
Acting Commissioner

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Comment Letter No. 8

March 9, 1995

Secretary Trudy Coxe
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Re: EOEA #9154
DRAFT EIR
WORCESTER COMMUTER RAIL
EXTENSION PROJECT

Dear Secretary Coxe,

The Department of Environmental Protection, Division of Water Supply, Central Regional Office (the "Department") has reviewed the Draft Environmental Impact Report (DEIR) for the Worcester Commuter Rail Extension Project, EOEA #9154, and would like to offer the following comments.

EIR Organizational Issues

The potential impacts to water supply resources such as aquifers and watershed protection zones are discussed in the specific station site drainage sections of the report. This presumes that drainage issues are the only potential impacts to water supply sources. However, the potential impacts from herbicide use along the tracks and bed and plans for snow removal or stockpiling within the recharge area of a municipal well or private well are important water supply issues and should be discussed in the Final Environmental Impact Report (FEIR). 1

Water Supply Issues

1) Potable water needs

The DEIR describes each station in detail and notes that sanitary facilities will not be provided at any of the facilities. If this decision is reversed in future plans, please be aware that a Massachusetts Division of Water Supply approved potable source of drinking water must be used. Connection of the project's facilities to an existing public water system is allowed provided the public water system has the capacity to meet the facility's demand. Calculations to determine the demand and plans to install the service connectionto the public water system must be included in the notification to the Department. If a new source is being considered to provide the needed supply of water to the facility, the new source must conform to the Department's Drinking Water Regulations (310 CMR 22.00) and the Department's Drinking Water Guidelines and Policies. The proponent must proceed through the new source approval process and the facility must be registered as a public water system. Initial as well as regular monitoring for contaminants will be required. 2

Plans for the Worcester layover facility include maintenance, storage, office space and sanitary facilities for all employees. Will this facility receive its potable water from the City of Worcester? Can the water system for the City of 3

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Worcester meet the demand (drinking, maintenance use, sanitation, fire protection) required for the facility? Have any agreements been made at this time? If connection to a public water system is planned, cross connection control devices must be implemented where necessary. 3

2) Herbicide usage

Provide information in regard to the number of years and frequency with which herbicides have been applied along this segment of the rail. Which herbicides have been used in the past and which are being proposed for use in the future? Will herbicides be applied more frequently as a result of this project? 4

Conrail currently manages herbicide use. It is stated in the DEIR that Conrail has an approved Vegetative Management Plan (VMP) from the Department of Food and Agriculture (DFA). Will Conrail assume the responsibility of vegetation management and herbicide application in the future? 5

What are the potential impacts to public and private drinking water supply wells and public surface water supplies from the herbicide application? The DEIR states that the only herbicides that are being used are those approved for use in "sensitive areas." Does this mean "sensitive areas" as defined in 333 CMR 11.02, such as primary recharge areas of public water supplies? 6

Are the communities/local boards of health/conservation commissions notified of the vegetative management plans for the upcoming year (333 CMR 11.06)? Are these groups given a means by which they can inform the proponent and/or Conrail of the location of new wells adjacent to the project that therefore would require adjustment of the herbicide markers? Are these groups notified of the approximate date application will take place (333 CMR 11.07)? 7

What measures are taken by the proponent and/or Conrail to ensure that all the existing wells (private and public) and potable water sources under investigation for future use are identified and are accurately located on a map as part of the VMP? Is the most recent information obtained each year from the local board of health and/or the Department of Environmental Protection, Division of Water Supply? 8

It is stated in the DEIR that herbicides are not applied within 400 feet of any <u>municipal</u> water supply well, or 100 feet of any surface drinking water supply, or 50 feet of any private well. In contrast, the Rights of Way Regulations 333 CMR 11.04(2)(a) state that no herbicides shall be applied within 400 feet of any <u>public</u> ground water supply well. In addition, no herbicides shall be applied within the primary recharge area (delineated Zone II or one half mile radius) of a <u>public</u> ground water supply well except by selective application and not more than once every two years. It is important to note that <u>public ground water supply wells</u> are not limited to <u>municipal</u> ground water supply wells as is implied in the DEIR. The Department's definition of a public water supply is a water supply which serves 25 people a day at least 60 days per year or which has 15 service connections; it is not dependent upon ownership. Therefore, public water supplies include municipal and privately owned public water supplies. Accordingly, all registered public water supply sources adjacent to the project need to be identified and labelled on the plans/maps in the DEIR and addressed appropriately. The Department should be contacted for the most recent list of registered public water supplies in those towns. It is important to note that it is quite possible that not all sources that meet the Department's definition of a public water supply have been identified and registered. It is also 9

appropriate to note that private water supplies are also vulnerable. Every precaution should be taken to be sure that all drinking water sources have been identified in the vicinity of the project.

In the future, it is recommended that the Department be contacted on a regular basis prior to herbicide application to provide input as to the most current listing of registered public water supply sources. The Department's regional offices should also receive a copy of the Yearly Operational Plan (YOP) if application is planned for the respective region regulated by the Department. 10

These issues are important because of the 1993 implementation of the Phase II regulations in which public water systems (municipal and privately owned) are required to monitor for a costly myriad of synthetic organic compounds (herbicides and pesticides). The Division of Water Supply is actively trying to educate its regulated communities and the public on source protection issues. The use of herbicides and pesticides within the Zone I of a public water source, for example, is prohibited. The Zone I protective area will vary in size from a radius of 100 to 400 feet depending upon the pumping rate of the well. Even the use of "approved" herbicides within a primary recharge area (delineated Zone II or one half mile radius) or within 400 feet of a public surface water supply (Zone A) may at some time pose not only a contamination problem, but a financial hardship to a public water system both in terms of monitoring costs and treatment costs.

It is stated in the DEIR that there are "no herbicide zones" and "limited herbicide zones" along the rail. Describe what is meant by "no herbicide zones" and "limited herbicide zones." Provide necessary details including the type of application (selective or broadcast) to be implemented in each type of zone. 11

Where are the herbicides stored and/or mixed? Any measures taken to prevent spills? How will herbicides be applied in the sensitive areas? How will unused chemicals be disposed of? 12

3) Maintenance of herbicide spray markers

It is not stated explicitly in the DEIR that spray markers are utilized as the method by which the perimeter of sensitive areas are delineated. It is assumed that this is the case because the presence of spray markers were used to determine the locations of inlet and outlet structures. This should be made clear in the Final EIR. 13

Field inspections of the track bed provided the location of the existing spray markers. The FEIR should include a map detailing the location of the markers and the zone types (no herbicide, limited herbicide, etc.) Where are the spray markers located and how are they mounted? Are the markers easily readable? Are markers replaced before they deteriorate from exposure to environmental elements? Are the markers reviewed prior to herbicide applications? The markers should be maintained so that they can be easily interpreted by the applicator. 14

The proponent states that the existing inlet and outlet structures will be cleared of vegetative overgrowth and other obstructions. This suggests that considerable time has passed since routine cleaning (removal of debris and overgrowth) has been conducted even though the track has been in use. Do future plans include a regular maintenance program for removal of vegetation from culverts and other structures along the tracks? Mechanical removal of vegetation rather than chemical removal should be utilized whenever feasible. 15

4) Railroad operations

It is not clear in the DEIR whether the additional track will be used strictly for commuter use only. Will there be any additional transportation of hazardous materials as compared to current operations as a result of the additional track? Consequently, will there be an increase in the potential for spills? Currently what are the provisions taken to prevent spillage of hazardous materials? Will any additional measures be taken? The Department strongly encourages the development of an emergency response contingency plan which can be implemented quickly in the event of a spill. 16

If there will be an increase in the freight operations as a result of the additional track, does the proponent expect there to be any increase in petroleum hydrocarbon (PHC) pollution associated with the increase in usage of the rail? The proponent states that a significant increase in concentrations of PHCs along the rail corridor is not expected by the additional activity of restoring commuter rail service. 17

5) Drainage, sweeping and snow stockpiling issues

Who will be responsible for parking lot sweeping programs and catch basin maintenance at each station? Is there any potential impact to water supply sources, public or private, from de-icing chemical and/or salt application to the parking lots or the stockpiling of contaminated snow? Will the proposed drainage systems adequately address contaminants from the parking lots such as salt, antifreeze, metals, oil, grease, etc.? 18

6) Water supply issues by town

a) Millbury:

Two locations have been proposed as possible sites for the Millbury station (Route 122 and Route 20). Both sites are approximately one mile from the Oak Pond Well, one of Massachusetts American Water Company's primary sources of public water for the town of Millbury. Both sites have some hazardous material contamination and thus the potential for release to the soil and groundwater exists. However, it does not appear as though activities at either station site pose a threat to the Oak Pond Well. It is stated in the DEIR that additional studies are needed to address possible hydrologic impacts to local private wells in the area as a result of the proposed site work and stormwater drainage system. It is important that these studies be completed in order to determine if replacement or connection to town water for these private wells is necessary. 19

The railbed is approximately 0.42 miles from the Interim Wellhead Protection Area (IWPA) of the Oak Pond Well. In addition, the railbed covers 0.35 miles of a potentially productive medium yield aquifer that would most likely be included in the Zone II of the Oak Pond Well when it is delineated. The railbed is also within 0.07 miles of a potentially productive high yield aquifer that is also likely to be part of the Zone II for this well. There is the potential for contamination of the recharge area for the well from herbicides applied along this portion of the railbed and general pollution associated with the railroad activities, including spills as a result of train accidents.

b) Grafton:

The proposed site of the Grafton station is not within the Zone I or IWPA of any of Grafton's wells. The railbed is, however, approximately 0.32 miles from the IWPA for Grafton's East Street Wells #2 and #3. Grafton's aquifer protection zoning overlay district does not include the proposed Grafton station site, but it does include almost one mile of railbed. The area covered by the railbed is likely to be included in the Zone II for these wells when it is delineated. Are herbicides being applied along this portion of the railbed? 20

An environmental site evaluation of the proposed Grafton station site indicates the presence of trace concentrations of acetone and freon and levels of cadmium above expected background levels in the soil at the site. No pesticides or herbicides were detected above background levels in the composite surface soil sample. What are the background levels for pesticides and herbicides? Were the groundwater samples analyzed for pesticides and herbicides? 21

c) Westborough:

The proposed station site and 0.2 miles of railbed are within the IWPA of Westborough's Otis Street Well. Both have the potential to be within the Zone II of this well when it is delineated. Development of another well for Westborough next to the Otis Street Well is also under investigation. Are herbicides applied along the railbed in this area? 22

Approximately 0.67 miles of the railbed runs through the combined Zone II for Westborough's Andrews Street Wells #1 and #2 and Wilkinson Well. The railbed is also 0.35 miles from the IWPA of Westborough's Hopkinton Road Well and Morse Street Well (the area is also known as Cedar Swamp). It is likely that the railbed will be within the Zone II for the Hopkinton Road and Morse Street wells when it is delineated. Are herbicides applied in these areas? 23

It is stated in the DEIR on Page 14-31 that the station site does lie within the Zone B contributing watershed area of the Andrews and Wilkinson wells as depicted in Figure 14.4-1. Two types of aquifer and direct recharge areas, A-1 and A-2, are also depicted on Figure 14.4-1 (attached). However, none of these terms were defined in the DEIR and they do not match current water supply definitions. Apparently, the source of this information is from the Westborough Aquifer and Watershed Protection Districts map completed by SEA Consultants in 1986. If this information is to be included in the Final EIR these terms need to be defined, however, it would be more appropriate to use recent water supply terminology, especially since these wells have an approved Zone II. 24

It is stated in the DEIR that the quality or quantity of the recharged groundwater is not expected to change as a result of the station site. A more complete explanation should be provided. The quality and perhaps the quantity will be affected if the site is within the Zone B contributing watershed area. What precautions will be taken to prevent pollution from the parking lot (stockpiled snow, salt, oils, metals, etc.) from contaminating the groundwater? Are herbicides being applied to the trackbed in this area as well? 25

Comment Letter No. 8

d) Hopkinton:

The railbed is approximately one half mile from Saddle Hill Country Club, a registered non-community public water system located in Hopkinton. The railbed and proposed station site are 0.25 miles from Carbone's Restaurant, a registered non-community public water system in Hopkinton. Is the proponent aware of these public water systems? 26

e) Southborough:

The proposed station site is adjacent to an area of Hopkinton that is served by private wells. Benzene, toluene and acetone were detected in soil samples from the proposed station site, however, these have not been confirmed. Determine if there is a potential for impacts from the site work and stormwater drainage from the station site to these private wells. Could the homes served by these wells be connected to public water if necessary? 27

For additional information regarding water supply issues associated with this project, please feel free to contact Andrea Lemerise at (508)792-7650 ext. 3723.

Very truly yours,

Mary J. Richards

Mary J. Richards,
MEPA Coordinator

cc: Dave Terry, Director DWS - Boston
Jana Leung, DWS - CERO

p: alemeris\mepa\#9154ws.com

Massachusetts Audubon Society

208 South Great Road
Lincoln, Massachusetts 01773
(617) 259-9500

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MAR 9 1995
MEPA

March 8, 1995

Trudy Coxe, Secretary
Executive Office of Environmental Affairs
20th Floor
100 Cambridge St.
Boston, MA 02202

Comment Letter No. 11

Attention: MEPA Unit

Re: EOEA # 9154, Worcester Commuter Rail Extension Project

Dear Secretary Coxe:

On behalf of the Massachusetts Audubon Society, I submit the following comments on the Draft Environmental Impact Report (DEIR) for the above referenced project.

As you know, Massachusetts Audubon is a voluntary association of people, representing 54,000 household members, and dedicated to preserving the biological diversity and water resources of the commonwealth. The Society has increased its involvement in statewide transportation system planning over the past few years, both in relation to environmental impacts of individual transportation projects, and also because of the effect transportation infrastructure decisions have upon surrounding land use. Over the past several decades, it has become increasingly clear that highway expansion is not the solution to traffic congestion, but rather contributes to sprawling development patterns, reliance upon single-occupancy automobile travel, and increased impacts upon the commonwealth's land, water, and air. Massachusetts Audubon generally supports commuter rail extensions and other forms of public transportation improvements, provided the environmental impacts associated with such improvements are minimized.

General Comments

The DEIR documents the general areas and types of environmental impacts associated with the project. This project would revive an abandoned commuter rail line, maximizing use of existing infrastructure (the railroad bed). Most of the project's significant impacts to land and water resources are associated with development of new rail stations.

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Comment Letter No. 11

Wetlands

Proposed wetland impacts have been reduced significantly since publication of the Environmental Notification Form (ENF) in 1992. Most notably, the proposed location of the Grafton station has been moved away from a previously proposed site that would have involved considerable wetland filling. The Final EIRs for the track improvements and individual stations should provide additional detail showing that all feasible attempts have been made to avoid and reduce impacts to wetland resource areas and buffer zones, and that impacts to wetland resource values have been fully mitigated. 1

Fencing

In the ENF, the MBTA had proposed to construct chain link fences along the right of way throughout the 23 mile project length, including the Westboro Cedar Swamp Area of Critical Environmental Concern (ACEC) and other predominantly undeveloped areas. The need for fencing has been reevaluated in the DEIR, and new fencing is no longer proposed in several undeveloped areas including the ACEC. These project modifications will reduce the impacts of the project upon wildlife.

The Society believes it is important to clarify, however, that the concern raised in our ENF comments regarding fencing as a barrier to wildlife movements and habitat utilization was not restricted to large mammals such as deer or moose, or to large scale herd movements, as discussed in the DEIR. Rather, Massachusetts Audubon was concerned about the fragmentation of habitat for numerous species that would occur through construction of miles of continuous fence. Fencing could divide portions of habitat used by many species, potentially affecting local populations of animals, for example through restrictions on essential seasonal movements or through isolation of individuals within populations for breeding purposes. Although some animals may be able to pass over, through, or under a chain link fence, not all species or individuals within a species will be able to do so. 2

Habitat fragmentation and isolation of local populations tends to reduce biological diversity over time. (see Harris, Larry D. 1984. The fragmented forests: Island biogeography theory and the preservation of biotic diversity; and MacArthur, Robert H., and Edward O. Wilson. 1967. The theory of island biogeography.) Similar concerns, of course, are associated with highways, subdivision roads, and general fragmentation of habitat from typical suburban sprawl type development. This is one reason why the Society supports reactivation of this existing commuter rail line over other options such as continued reliance on highway expansion projects and dispersed development patterns.

The Society requests that the MBTA carefully evaluate and weigh the public safety benefits and environmental impacts of future new fencing along all its lines throughout the commonwealth. 3

Additional Information for Final EIRs

The DEIR contains a level of detail adequate to understand the project as a whole and alternatives that have been considered for siting of local rail stations between Worcester and Framingham. The Final EIR(s) should provide additional, site-specific details regarding rare species impact avoidance; wetlands avoidance and mitigation; and stormwater management system design for the railbed improvements and each proposed new station. 4

Conclusion

The Massachusetts Audubon Society supports the project in concept, provided impacts to sensitive biological and water resources along the project corridor are minimized and carefully managed. The DEIR is adequate, and documents how project impacts have been reduced in some significant ways (i.e. reduction of wetland impacts and fencing, provision for stormwater best management practices at stations). The Final EIR's for the railbed improvements, and Final EIRs for new stations should provide additional details regarding site-specific impacts and mitigation. 5

Thank you for the opportunity to comment.

Sincerely,

E. Heidi Roddis

E. Heidi Roddis
Environmental Policy Specialist

cc: Jane Sherman, MBTA
Conservation Commissions and Planning Boards: Grafton, Millbury, Worcester, Westborough, Southborough, Ashland, Framingham
DEP Central Regional Office
Metropolitan Area Planning Council
Central Mass. Regional Planning Commission

Preservation Worcester
20 Washington Square
Worcester MA 01604

February 27, 1995

Comment Letter No. 18

Secretary Trudy Coxe
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

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RE: EOEA #9154
Worcester Commuter Rail Extension Project DEIR

Dear Secretary Coxe:

Preservation Worcester is pleased to present its review of the Draft Environmental Impact Report (DEIR) for the Worcester Commuter Rail Extension and offer our comments for your serious consideration.

Preservation Worcester endorses the concept of 5 interim stops between Framingham and Worcester to provide a reliable public transportation alternative to 28 regional communities.

PW has been a strong proponent of the Union Station Project. Central to the success of that project is its development as an intermodal transportation center . It will promote Worcester as a destination, stimulate downtown development and economic growth, and improve linkages throughout the region. The establishment of commuter rail service to and from Boston and points inbetween is critically important to this regional approach and long range development of downtown.

The DEIR defines an interim station and layover facility to be located adjacent to the existing Amtrak Station and close to Union Station. PW endorses this plan which would accommodate the existing demand for commuter rail now equaling over 500 riders a day. It also fully expects and plans for Union Station to become the station for the commuter rail extension, once rehabilitated. PW urges that plans to retire the interim station and remodel the layover facility be included in greater detail in the DEIR. 1

PW endorses the Worcester Office of Planning and Development's request that the MBTA make the layover facility a double 2

ended facility once Union Station is operational. 2

The issues of air quality and noise are of great concern to the residents of the area and will impact business and residential development in the area. Both issues are addressed in the DEIR . Analysis demonstrates a worst case scenario would comply with safe federal guidelines. The reviews, however, were based on new trains, not older models. PW recommends guidelines should be established to assure that only safe, newer trains would be used, not the older trains which would not meet safe standards. 3

Thank you for your consideration of these recommendations.

Sincerely,

Patrice O'Malley Hagan

Patrice O'Malley Hagan
Chair, Urban Design Committee
Preservation Worcester

CITY OF WORCESTER, MASSACHUSETTS

THOMAS R. HOOVER
City Manager

STEPHEN F. O'NEIL
Director

Telephone
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EXECUTIVE OFFICE OF THE CITY MANAGER
OFFICE OF PLANNING AND COMMUNITY DEVELOPMENT
418 MAIN STREET, SUITE 400
WORCESTER, MASSACHUSETTS 01608-1885

February 24, 1995

Comment Letter No. 19

Secretary Trudy Coxe
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Attention: MEPA Unit

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RE: EOEA #9154
Worcester Commuter Rail Extension Project
Draft Environmental Impact Report

Dear Secretary Coxe:

Worcester's Office of Planning and Community Development (OPCD) has reviewed the Draft Environmental Impact Report (DEIR) for the Worcester Commuter Rail Extension. We offer the following comments for your review.

Project Justification

The Office of Planning and Community Development fully supports the Worcester Extension project and its elements. Local rail service ran continuously between Worcester and Boston between 1835 and 1975. The maturation of Boston's rim and spoke highway system and the widespread reliance on the automobile contributed a great deal to the demise of local service. This increased reliance on the automobile did not solve the problems of a region that continues to suburbanize. The City of Worcester embraces the establishment of commuter rail service from Boston to Worcester as a regional solution to long range transportation problems. Projects such as the Worcester Extension are also encouraged at the federal level through the 1990 Clean Air Act (CAA) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).

This extension of commuter rail service is a key component in the downtown economic development plan. This project provides a needed transportation link to the Fallon/St. Vincent Medical City Project, a new Convention Center, the conversion of the Worcester Common Fashion Outlet, and the restoration of Union Station. Some of these developments, namely the Centrum and Worcester Common Fashion Outlet, are already underway or currently exist. These

Comment Letter No. 19

existing sites draw thousands of visitors to Worcester in non-peak hours and on weekends. Also, Table 2.3-5 notes that approximately 3,900 people commute from the Boston Region to Worcester. However, the current interim service schedule does not provide for evening or weekend service from Boston to Worcester. In light of the important role passenger rail plays in Downtown development and the reverse commute numbers displayed in Table 2.3-5, OPCD encourages the project proponents to amend the current interim service schedule to include reverse commuting, non-peak hour, and weekend service. 1

Environmental Issues

Location of Layover Facility

OPCD supports the choice of Site 8 (Worcester, Conrail Yard, MP 43.5) as the location for the layover facility. While it does not accommodate a double ended facility, the location does offer the following benefits.

- Accommodates a facility with four tracks.
- Is located adjacent to the existing Amtrak Station and is within a mile of Union Station.
- The surrounding area is industrial and the facility is located in an existing rail yard.
- Location allows for personnel facilities and parking.

OPCD requests information regarding the remodeling of the layover facility once the rehabilitation of Union Station is complete. Also, once completed the rehabilitated Union Station will become the station for the commuter rail extension. The need for a passenger platform at the current Amtrak station would no longer exist. OPCD requests that the MBTA consider making the layover facility a double ended facility at that time. Such a remodeling may also eliminate the possibility for conflict between the facility and an existing sidetrack and allow larger vehicles to access the train sets. 2 3

Finally, there are no sensitive environmental areas on site, such as wetlands or municipal water supplies, nor does site evaluation show evidence of oil or hazardous materials in the soil or groundwater.

Location of Station

OPCD supports the location for the interim station with the understanding that Worcester's Union Station will become the terminus once rehabilitation is complete.

Noise and Air Quality Mitigation

While there does not appear to be any issues concerning wetlands and municipal water supplies, other potential impacts do exist. Trains will still be required to idle, thus creating potential air quality and noise impacts. In regards to air quality, the DEIR reviews a worst case scenario of the F40PH-2C and F40PH-2 locomotives likely to see service in Worcester. In this scenario there are no violations of the NO2 standard. The worst case scenario only reviews those locomotives that are likely to see service on the Worcester Extension, it does not review the potential emission factors of older locomotives such as the 1000-series (F40PH). 4

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A similar scenario is used in reviewing noise impacts. The DEIR notes assumptions regarding the idling needs of the newer 1050 series locomotives and provides for mitigation strategies. The DEIR does not mention strategies for the older 1000 series locomotives. Additionally, the DEIR provides the result of a "Pure Tone" Analysis in which the 1050-series meets the Department of Environmental Protection's guidelines concerning sound characteristics. The 1000-series does not meet these guidelines. 5

Until such time that the MBTA can ensure and demonstrate that 1000 series locomotives will not be stored at the facility, OPCD requests that a mitigation strategy be developed for instances when the 1000-series locomotives are required to layover. The MBTA has already demonstrated a desire to cooperate with the City on this issue.

Construction Schedule

In light of recent events at the temporary layover facility, OPCD urges the MBTA to use all expediency in the construction of the new layover facility. The temporary facility is currently located in the Providence and Worcester rail yard and has been the target of criticism by abutting residents. The complaints are in regards to overnight noise and diesel fumes emitted by the idling engines. To the MBTA's credit, steps have been taken to minimize the noise and fume problems. Despite the changes, one engine will continue to idle throughout the night. Because layover operations may be considered more intrusive than normal train noise, the possibility for future complaints still exist. The sooner the new layover facility becomes operational the sooner the trains can be moved away from the sensitive receptors in the vicinity of the Providence and Worcester railyard. 6

The City of Worcester Office of Planning and Community Development appreciates this opportunity to comment on this Draft Environmental Impact Report and trusts that any outstanding questions will be addressed to OPCD, 418 Main Street, Suite 400, Worcester, MA 01608.

Sincerely,

STEPHEN F. O'NEIL
Director

Comment Letter No. 37

NG

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March 8, 1995
The Honorable Trudy Coxe, Secretary
Executive Office of Environmental Affairs
MEPA Unit
100 Cambridge Street
Boston, MA 02202

Attn: Nancy Baker, MEPA Unit

Re: Draft Environmental Impact Report, EOEA #9154

Dear Secretary COXE:

I am enclosing the following comments regarding the Draft Environment Impact Report, EOEA #9154 on the Worcester Commuter Rail Extension Project. Some of these comments have been previously expressed by the Citizens Advisory Committee, Metro West Growth Management Committee, Ashland Board of Selectmen and its rail committee, and the Metropolitan Area Planning Council. I will try to minimize duplication except where it is necessary to emphasize a strategic point.

Before going into the details of my comments on the two volume EIR, I would like to discuss the overall framework regarding the Commuter Rail Extension. It is my firm belief that for a community to be "sustainable" in the State of Massachusettses, there are several key components for improved quality of life and environmental setting.

One, there is a need to make our towns, villages, and cities "holistic" in the sense that they have the ability to maintain a "sense of place" and community.

Two, The patterns of settlement need to investigated sprawl development and the reliance on automobiles are limited in the sense that the number of trips are reduce. It is obvious that one can not totally eliminate the use of automobiles in today's society, but one can minimize automobile usage to a more beneficial level for all concerned.

The Commuter rail extension offers an alternative tool to minimize sprawl which is offered in other parts of the country such as metropolitan Chicago, Portland, San Francisco and other places outside this country such as metropolitan Toronto, Paris, London, Stockholm, and an area in Holland.

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We need to offer choices in transportation modes, hopefully with the right equipment and attitudinal changes, adverse air quality levels will be reduced, traffic congestion will be mitigated, resulting in communities that are re-invigorated at a more pedestrian scale.

Next, "sustainable communities" as previously noted are not sprawl development scattered about the landscape. Is this project going to improve the current situation in the Commonwealth or is it going to create further sprawl. The problem, as I see it, in this report, is that the stations are generally located in isolated locations that can be described as "pure park and ride stops". There are three possible exceptions to this comment, the Worcester, Ashland, and Southborough stops. If one is to build pure park and ride stations, then we are driving automobiles to large parking lots and not improving the fabric of these communities. 1

What is even more distressing is that the location of these stops such as Millbury and Westboro which are prime examples of improper sitings. In these isolated locations such as Westboro is difficult to determine who is going to be utilizing said station. In the Millbury example, it is also difficult to determine as to why commuters west of Worcester would opt for the station as opposed to going and staying on the Turnpike. In addition, at the present time, the Mass. Turnpike has a number of "park and ride" lots including a site in Auburn near there interchanges. 2 3 4

Next, the report does not go beyond its current role in the construction of the station and does not comprehensively examine existing and future land usage in the vicinity. Nor does it go into to much detail over intermodal set-up, preferring to concentrate on the "park and ride" setups. There are good examples of regions investigating land usage and mix of land use such as Metropolitan Toronto with its commuter rail, street cars, buses, and subway systems along with Metropolitan Chicago. (See attachments) Why isn't the MBTA taking the lead in promoting such land use and transportation improvements such as METRA in Chicago and Go Transit in Toronto. [Sources: Ministry of Transportation and Ministry of Municipal Affairs, Province of Ontario, Transit-Supportive Land Use Planning Guidelines, April 1992; City of Scarborough, Ontario, Canada, The Stouffville Go Corridor: Station Location Opportunity Study, July 1991; and Northeastern Illinois Planning Commission and METRA, Land use in Commuter Rail Station Areas: Analysis and Final Report and Land Use in Commuter Rail Station Areas: Guidelines for Communities, November 1991.] 5 6

Other overall questions include the status of the regional station at I-495 and the Mass Pike. The report glosses over this issue because of time constraints and costs, if the true need is to get cars off the highways then said automobiles should be taking off the roads at the earliest point as possible. 7

Next, there is little comment on the connectivity with the State Parks at the proposed Ashland and Southboro stops. These two State Parks are in close proximity to this system and are important activity centers for the State. In other words, reverse commutes could be considered in more depth than as currently depicted in this report. 8

Also, the issue of air quality in relation to electric cars needs to be explained in more detail. Will said electric cars reduce air pollution and will the matter congestion and parking remain?

Now the specifics of this report. I have skipped over the Executive Summary to concentrate on the meat of the report and its appendix.

Project Overview--Section 1.0 to 1.4; and Opening Memorandum in Appendix II-Volume II--Section 2

There is quote that states the project is an "integral part of regional transportation and environmental initiatives." My comments previously stated regarding the isolated nature of the proposed stations questions this point. In the opening memorandum in Appendix II, I have concern with the figures forthwith the numbers of riders served --is it 3,385 or 4,500; 9

Appendix II--Section 2--Introduction 1.0; Table 1A; Table 2,; Table 3

Is the travel model taking into account all modes of active and passive transport. How can they be sure that the work trips in 1990 are accurate and whether they can reflect potential ridership. For example, in Table 1A, refer to six work trip to the Boston CBD from Spencer and project 11 trips in the year 2011 whereas Table 2 refers to 5 transit trips in the year 2011 which all originate in the Worcester Station according to Table 3. It is my belief that a Spencer commuter would not drive to the City of Worcester Station in prime time particularly since said commuter would have to traverse the local streets thru one-half of the City. Instead he could possibly opt for the Mass Turnpike in Auburn as a park and ride situation then transfer to alternative transit. 10

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11

In addition, I question the use of the model itself. As stated in a report entitled "The Transportation/Land Use Connection" by Terry Moore and Paul Thorsnes, most metropolitan area models for transportation and land use "lack solid economic foundations. Predictably, these models fail to forecast changes in land use and transportation patterns with anything approaching the precision needed for a rigorous analysis of the long-run impacts of proposed projects....no computer simulation model currently exists that predicts land-use and travel patterns in large polycentric cities with the accuracy needed to evaluate incremental improvements to the transportation system." [Source: APA Planning Advisory Service Report., No. 448/449, 1994, pp. 7-8.]

Needs Analysis--Section 2.0-2.3, pg. 2-5

In this section, there is a quote which states "of more importance in terms of commuter rail service is the significant growth in journey to work trips to Boston and Cambridge....There are a substantial number of commuter work trips to Worcester as well. These trips might support a 'reverse commute' service to Worcester. The outbound morning and inbound evening trains proposed in the Worcester Extension service could accommodate such riders." I would like to know what documentation or forecasting is being utilized to substantiate this claim. Reverse trips to Worcester for special events and the recreational trips to the State Parks as mentioned previously in this letter and other items should be elaborated in this study. 12

Project Elements--Section 3, Table 3.1-1, pg. 3.1; Sub-section 3.2--Stations, pg.3-15; Grafton Station, pg. 3-25; Sub-section 3.4--Commuter Rail Train Schedules, pg. 3-39; Sub-Section 3.6--Costs and Revenues, pgs 3-47,3-49; Sub-Section 3.7--MBTA Mitigation Policy, pg. 3-51;

The Table on Proposed Railroad Vertical Clearance Improvements notes three improvements in Ashland, ie. Howe St., High St., Fountain St. It was my previous understanding that Ashland's Fountain St. bridge is critical for movement of emergency and other vehicles in Town and that said bridge would be reconstructed in a timely fashion. This therefore may not require the lowering of the tracks; however, does this impact upon the progress of the commuter rail or does lowering the tracks slow down bridge reconstruction? This may also be applicable to the High Street bridge which has a higher priority for reconstruction. 13

With regards to "Generic Station Details", there is a comment that "parking lots will be constructed at each station, with the lot size being dependent on projected demand and availability of sufficient land for construction. In addition, each station will include lighting, landscaping, benches, and bicycle racks. Facilities will be provided to allow for installation of telephone and newspaper vending machines. 14

I do not believe that this description goes far enough as station area site plan. There should be more details and more amenities offered from a "bare bones" station. 15

In addition, "fencing will be installed between the inbound and outbound tracks", is this being consistent with the rest of the commuter rail presently in operation. 16

As for the Grafton Station and other stations, I have concern for pedestrian overpasses, train platforms, and the walking distances to the parking lots. Do these stations meeting the requirements under ADA?

Next, there is reference to "basic service" and "expanded service" that is proposed as well as the current "interim service." It my contention here that the transition from the interim service to the new services should be phased in over a period of time to allow for a complete study of the different components of the travel mode and its frequency including ridership, peak hour demand, and parking requirements. This is preferable over installing the stations without such a thorough examination of the commuter rail extension. 17

The MBTA estimates the operating costs at $12 million dollars with annual revenue projected at $5 million with a claim for 42% cost recovery that exceeds their target of 33 1/3% To the laymen this easily demonstrates that this line is not only operating at loss but is being heavily subsidized.

[See later comments under Section 4.0.]

Next, "if station generated traffic degrades the level of service from LOS D or better to LOS E or LOS F, corrective action will be proposed. Does this preclude corrective actions when levels of service drop yet do not fit in the above categories? 18

Comment Letter No. 37

The study also states that "if an existing condition revels an unacceptable LOS for an intersection or roadway segment, and the addition of station generated traffic materially worsens that condition, every reasonable effort will be made to correct the problem created by the additional burden...." A more detailed explanation on this philosophy should be forthcoming. 19

In addition the MBTA policy "provides for the expenditure of up to 2% of the project construction cost for noise and vibration mitigation. Consideration of the cost effectiveness of any noise mitigation measures must be weighted against the actual relief provided." Two percent may be too limited on this matter. 20

As for wetland impacts, "the primary thrust of the right-of-way and commuter design effort will be to avoid wetland, floodplain and drainage impacts." This needs to be examined further in light of the Wetlands Protection Act's stringent rules regarding wetland alteration. 21

Alternative Analysis--Section 4.0, Alternatives Considered, pg.4-2; Costs, pgs 4-12-4-14; Conclusion, pg. 4.4

I have considerable concern with the proposed alternative outlined in this report. One, there is concern that the Marlboro/Hudson traffic will be dumping out onto the rail stations at Southboro and Ashland. If this is the case, then the Mass Pike/I-495 station would be a paramount location and should be fast tracked for implementation.

Second, this report fails to note the current ridership for interim service and its resultant shift from the bus lines to the rails and vice versa and does not dramatically increase the overall ridership. Based on visual observations at the City of Worcester station, it has been noted that there is a higher level of commuters utilizing the rail in the morning peak hours, however, many of these riders switch back to the bus at night due to scheduling and delays on the trains. 22

Next, the reliance on the spur lines from Marlboro and Milford are somewhat questionable. Here, the emphasis should be placed on the direct bus routes into Boston or major proposed intermodal stations such as in Framingham Center or Logan Express area near Mass Pike. 23

As for costs, Table 4.2-2 depicts Commuter costs at 3.24 million with revenues of $5 million which make such service run at a profit of $1.76 million. Looking at the rail alternative #1 (basic service) in Table 4.1-8, calculates total annual cost of $7.35 million and with annual revenues at $3.82 million running deficit of $3.53 million. These two table along strong state in terms of dollars and cents that buses are more profitable alternative. Therefore, in order to help justify this fixed mass transit mode of travel, other items need to be stressed such as air quality and compatible land uses.

Under the "Conclusion" in this section states that the "proposed basic commuter rail service improves air quality over 'No Build' and also serves long standing MBTA policy goals around the development of a viable public transportation system which affords the various regions around Boston equal access to its downtown." The MBTA goal needs to be stressed further. In addition, the issue of air quality needs to be justified further in light of the nature of the proposed locomotive equipment. 24

Ridership Projections, Regional Traffic, and Air Quality Impacts---Section 5.0

Concern with definition of service area and ridership projections from CTPS>

Socio-Economic Impacts--Section 6.0, pg.6-3.

According to this report, the "project is not likely to have or to create significant development effects....Nonetheless, there may be a marginal impact on development, particularly housing development, since the project makes the area more attractive to those who work in Boston..." The emphasis of this project should be to stimulate compatible land usage near the tracks to create a significant amount of density and useful commercial and industrial land uses that would service the train. This is not referenced in this report other than briefly mentioning the locational advantages of rental units. 25

In addition, "the project's line impacts on property values are likely to be negligible" according to the report. Again, this may be a very strong understatement if this project is to work correctly then property values will change appreciably. 26

Comment Letter No. 37

The report further notes that the "station sites in Ashland, Millbury, and Southborough will be located in areas of mixed commercial and residential use...for these sites, there is a general convenience and improved access to Boston that they serve, by extending farther out from the downtown core the distance of a reasonable commute; this should improve property values generally." In the case of Ashland, the residents of the rail station area, have expressed the interest, to have their property rezoned to allow further land use options on their respective properties in order to get back a fair appraised value for the use of their respective properties.

Environmental Impacts--Railroad Right-of-Way--Section 7.0, pgs 7-10 and 7-11; pgs 7-17-7-19; Table 7.8.1--Historic Properties, pgs. 7-67-7-79; pg. 7-63; pg. 7-57; pg. 7-80; pg. 7-83.

The report states that "in Ashland, grade crossings at Cherry Street and Main street are protected by gates, warning lights, and bells. Located near the downtown section of Ashland, these crossings are heavily uses, particularly the Main Street crossing....the MBTA currently is exploring, with Conrail, possible remedial measures, such as replacement of the control box." These two grade crossings are critical items for the future viability of the downtown area of Ashland. For instance, dropping European styled gates at the grade crossings would effectively create a "Berlin Wall" atmosphere that would separate the downtown into two separate parts. 27

Long term remedial measures such as elevating the rail tracks would have a huge appearance problem for the community and would replicate past mistakes such as the Central Artery in Boston. Depressing the tracks would be a better alternative; however, there are concerns over the EPA contamination issue. Consideration should be made for depressing these tracks since it is important to maintain the viability of this village center. Suggestions proposed or implied in this report for said crossings do not foster this community sense. 28

In addition, the report states that the Ashland station will provide ample parking on the south side of the tracks and therefore minimize rail crossings and traffic through the downtown area to points beyond such as the Mass. Pike and Route 9. It is hoped that this would reduce the vehicle ridership; however, there are going to be additional commuters from the nearby towns of Holliston and Hopkinton that will offset this gain.

As for air quality, I have previously mentioned the importance of examining the locomotive exhausts at the various proposed stations along the corridor.

With regards to noise, "the primary cause of noise impact along the corridor under expanded service is the additional 12 train operations per day. The increased maximum speed projected for both passenger and freight trains is also a factor in some areas.

For localized areas, the sounding of train horns near grade crossings has a significant contribution to the total noise exposure." In addition, "four of the nine residential listed as impacted...are in a multi-family elderly housing building. It should be noted that at the current time, that the Town of Ashland is working diligently to minimize the impacts of the soundings of the train horns. This is a very significant issue within the community of Ashland when train horns are going off at all different hours during the day and night and disrupting the inhabitants.

Under "path noise control", the report notes that "potential train noise mitigation provided in Table 7.3-3 indicates the estimated length of noise barrier needed to mitigate all train noise impact in each community...." Mitigation cost estimates were based on a 16-ft high noise barrier cost $20 per square foot. The minimum barrier height for diesel-hauled trains is significantly higher than that of electric or rapid transit trains because the barrier must be high enough to shield the predominant noise source, the locomotive exhaust."

In addition, "the barrier locations, lengths, and heights estimated at this stage [are] preliminary. Detailed barrier designs will be designed during the final design stage..." The barrier locations along with the fences need to be examined as soon as possible, since said items are mitigation measures for nearby land uses but also have aesthetic design considerations as well. 29

Also note under "safety and security" sub-section, "the standard six foot high chain link fence would be utilized at most of the fence sites along the right of way."

Under the "wetlands" sub-section, there is a Table on Total Project Wetland Impacts (pg. 7-57), in terms of Ashland in referencing two sites in Ashland, i.e. east and west alternates, and footnotes the fact that the western site would require filling in approximately two acres of wetlands. There is a concern here as to whether the local and state authorities would allow filling in of wetlands greater than minimal thresholds. In addition, the basis of mapping said wetlands needs to be determined in greater detail. Also note the habitat maps in Figure 7.0-1. 30

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As noted in the Historic Properties/Sites Table, the Town of Ashland has a number of historic properties and sites. However, with the exception of the bridges, news store, hotel, and old rail station, all the remaining locations have question marks in terms of potential eligibility.

Under the sub-section on "archeological resources", there is reference to an old mill site, ie. Aldrich mill, on the Southborough-Ashland town line and states that it is in close proximity to the Sudbury River. Further elaboration on this cultural resource is necessary. 31

Under the "proposed mitigation and mitigation options" sub-section, the total length of noise barrier required to mitigate noise impact is estimated to be 1,200 linear feet for basic service and 16,950 linear feet for expanded service." This is quite a change between the two levels of service and should be noted in relation to fencing as previously mentioned. 32

Sections 8 thru 10: no comment.

Alternative Commuter Rail Station Sites/Station Designs--Section 11.0, pg. 11-3, 11-13-19.

The reports notes the two options for Pleasant Street in Ashland, one would provide parking for 350 cars with one commercial property taking, the other would require 480 and two commercial properties. The Pleasant Street" site noted on page 11-14, is the favored site of the MBTA. "The revised ridership figures prepared by the CTPS showed that the majority of the riders at an Ashland station would originate in Holliston and Ashland and travel through the center of town to reach the station." This item should be questioned since there are other abutting towns that would also utilize this station such as Marlboro and Hopkinton. 33

The Ashland Station-East site is the preferred site at this time. Other sites were considered as well. This preferred site does mention the location downgradient from Nyanza and the site cleanup. "Although the MBTA, DEP, EPA, and Town of Ashland all agree that this site is the preferred alternative, final details (particularly the liability and legal issues) have yet to be confirmed. As a result the High Street/Split Configuration (Site D) and Pleasant Street/Megunko Road (Site B) will continue to be carried forward." These agencies all need to be cooperating together to make this station area and its surrounding truly blend in with the positive fabric of the community. Initial contacts have been made with these agencies, however there needs to be incentive from and for both the public and private sectors.

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Environmental Impacts--Millbury Station--Section 12.0

A number of figures depict the isolated location of the Millbury station particularly 12.1-4. This is reinforced in that CTPS projects do not forecast any patrons walking to this station.

Environmental Impacts--Grafton Station--Section 13.0

This site as depicted has potential to blend in with nearby land uses such as Tufts, yet again no pedestrians are forecasted in the CTPS projections.

Environmental Impacts--Westboro Station--Section 14.0

Again the station site is isolated and this reinforced in the CTPS projections for no pedestrians. Said station itself serves riders in Northborough, Shrewsbury, and Upton over Westborough residents. Of all the sites between Worcester and Framingham, this site presents the least benefit to the community at hand.

Environmental Impacts--Southboro Station--Section 17.0

This is a key station in the system since commuters from Southborough, Hudson, Marlboro, and Hopkinton, and Westborough, could utilize this site which totals a ridership of 550 people in 1996. The greatest majority of commuters at this stop come from outside Southborough and have the opportunity to utilize the excellent superhighway network in the vicinity. The only constraints in the year 2001 is due to parking constraints.

According to projections, 83 riders will be drop off, the remaining 467 would be park and ride. CTPS does not project pedestrian ridership however there are residential areas nearby and therefore the Town of Southborough is requesting sidewalks in this area.

This site becomes a "de-facto" regional station. The Cordaville/Southville site like the Ashland site should be primarily village oriented stations that serve the neighborhood. Said stations secondarily should be intermodal in character to encourage pedestrian and bicycle traffic. In addition, the Southboro station should be linked on an access basis with the Hopkinton State Park.

34

35

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Under the "assignment of riders" sub-section, the report states that the "observations of distribution by train tend to show the greatest number of riders on the trains arriving at Boston close to 8:30 A.M. Trains arriving earlier and trains getting to Boston after 9:00 A.M. tend to attract fewer riders." This observation is a little disconcerting in the fact that a number of people would commute at an earlier time prior to arriving in Boston at 8:30 AM. such as arriving in Boston at 8:00 A.M.

In addition, there is no reference to non-commuter trips to Boston for other reasons such as recreational and cultural activities.

In the sub-section on 1996 traffic impacts for Southborough, Table 15.1-10 states that a number of road segment levels for peak P.M. hours, the LOS is at E level. This is disturbing and should be improved upon. 36

The report notes the significance of the 19th century mill village in Cordaville, yet this station is not being addressed enough with this in mind. 37

Also, the visual impacts should be revieved in detail such as lighting along with the aesthetics of the fencing. 38

Environmental Impacts--Ashland Station--Section 16.0

The report states that "the ashland station is projected to attract 738 patrons in 1996, with daily ridership increasing to 1,093 by the year 2011." This becomes one of the highest ridership stops along the rail and would transform the Ashland site into a "de-facto" regional station. It is not the intent of this Community to become a regional station, the fabric of the community would be destroyed by such wholesale change without accommodating mitigation measures and nearby site improvements and inducements for development in the area particularly around the Nyanza locus. Again this should be a local stop in keeping with the village concept of this community.

In the sub-section on "rail ridership projections, the report states that the origin of 738 riders include 377 from Ashland The rest come from surrounding Towns. Again, these figures are very disconcerting, depending on the nature of the Southborough site, ridership would be more regional in nature with significant number of out-of-town commuters.

On a positive note, with the exception of Worcester, this is the only station which the CTPS predicts walk trips to the station. Although the number is small at 20 walkers, this number could increase dramatically.

Next, although Figure 16.1-3 depicts daily and weekly traffic on a number of streets in Ashland it fails to show the amounts of vehicles on Route 135. This volume currently is in the vicinity of at least 17,000 v.p.d. This is a major factor that should have been placed on this drawing. 39

In Tables 16.1-15 and 16.1-16 on road segments, the report depicts a LOS of E for Cordaville Road. This should be examined for improvements in more detail. In addition, a proposed roadway should to the site should be factored in the traffic analysis and design as well. 40 41

In the sub-section on "hazardous materials", the reports cites a listing of three sites near the proposed station that are "confirmed disposal sites for investigation" by DEP. This includes Nyanza, 3C Electrical, and the Perini Corporation. These disposal sites (ie. Brownfields) should be evaluated in an overall plan in conjunction with the rail station and surrounding land uses. The sites should be cleaned in a proper matter for reuse. 42

In this section, there is further description of the proposed Ashland Station-West site. Again note the filling of the approximate two acre wetlands to make this a viable site. Unless said site wetlands have been improperly depicted and are not significant under the Wetland Protection Act, further analysis of this site may be counterproductive.

In subsection 16.22 on pedestrian safety, the report states that the potential twenty walkers "could use the existing sidewalk along the north side of Pleasant Street to reach the commuter rail station." This is unacceptable, infrastructure improvements are necessary on this street to make the area more pedestrian oriented, specifically installation of two sidewalks in "class 'a'" condition. 43

Also the issue of fencing, should be investigated in terms of aesthetics as well.

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Regional Station Analysis--Section 17.0

Only comment is to re-energize examination of Westboro I-495 site.

Environmental Impacts--Framingham Station--Section 18.0

The Framingham station and the impacts of new commuter rail service should be investigated in far more detail. The Framingham station in the downtown would end up as a regional intermodal facility. This is particularly with regards to the interim service and the current study of Route 126. 44

Environmental Impacts---Boston South Station/Back Bay Station Section 19.0

Interesting "pedestrian levels of service drawing on page 19-3. Could such an analysis be used on other stations such as the Framingham site. 45

Appendices in Volume I

October 8, 1992--Certificate of the Secretary of Environmental Affairs Establishing a Special Procedure for a Major and Complicate Project

Under the special procedures, the certificate mentions the level of design stages for this project. Are these correct as stated? In addition, this process allows the MBTA discretion in timing of the filing of the Final EIR, if this still holds, <u>it is recommended that the interim service, and staged levels of increased service be analyzed more thoroughly including examining the ridership and that time be allotted to each community to devise a station area plan with local and state help.</u> 46

<u>At this point in time to push this EIR would jeopardize major goals in improving the environment, prohibiting sprawl, and mitigation air quality.</u>

October 22, 1992--Certificate of the Secretary of the Environmental Affairs on the Environmental Notification Form, pg. 9

In the ENF certificate, there was a question raised as to why the 400 space parking proposed for Pleasant Street was scaled back and if ridership projections are higher where will the parking be accommodated? In the judgment of this review, this goes to the heart of whether this is a local or regional station.

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In addition the ENF further states that "given that the station is in a transition area, the EIR should consider how this station can tie together the mix of uses by means of layout, design, etc. For example, a commenter has identified a need for sidewalks on Pleasant." These comments reiterate the need for rail station that is in keeping with the future enhancements to the neighborhood and acts such as catalyst.

January 14, 1994--Certificate of the Secretary of Environmental Affairs on the Notice of Project Change

This commenter will only reiterate the need to study interim service and evaluating the phasing of increased levels of service over time. 47

CAC-Citizens Advisory Committee--Comments on Draft Environmental Impact Report, pg. 2

The Citizens Advisory Group correctly suggests that there are unique growth scenarios occurring in the MetroWest area. The Ashland growth numbers are astronomical and reflect this phenomenon.

Next, this reviewer concurs that traffic should be diverted onto collectors as opposed to local streets. Next the comment regarding complete train schedules in well taken along with noting the timing of the train ride from Boston to Worcester. For example, how can the basic service take 67 minutes when the interim service takes up to 70 minutes. 48

Also,this reviewer concurs that mitigation measures should be completed prior to the opening of each station. 49 Next, the cost recovery ratio is 64% on the current Framingham line, with the extension it drops to 42%. 50 This needs to be explained more fully as stated by the CAC.

Other issues besides the operating costs should be raised and the benefits more visually spelled out. The CAC also notes that the report does not state where the remaining 58% of the operating budget will come from, this too needs further explanation. 51

Finally, "small towns which are already predicted to have higher ridership than...[Worcester] are understandably worried that the projections could be underestimating demand." This should be clarified in terms of interim service and future phasing of increased levels of service. 52

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Assessment Comments by Reviewer

This reviewer believes the assessment formula is all wrong: Why are towns penalized for using the MBTA system: Why are some towns such as Franklin given free rides as opposed older urban areas which carry the bulk of the mass transit ridership.

Perhaps it would be fairer to approach assessments in one of two manners: one, state-wide assessment based on a number of factors such as ridership, population, land use impacts, etc; two, the elimination of assessments on those communities utilizing mass transit and transferring said assessments on those communities that do not support mass transit and encourage automobile usage. Of the two, I would prefer to see the changeover of equalized assessments to those communities that are not availing themselves of mass transit or are not improving air quality and environmental issues.

Appendix--Volume II

Section 2.0--CTPS Ridership/Parking Demand
Sub-Section 8.0 Model Results

This sub-section discusses six separate scenarios in the modeling. It notes that the Ashland station would have the highest demand for parking spaces about 760 spaces in 2011. "We assumed that most of the existing Southborough and Ashland riders who currently use the Framingham station would now switch to the proposed Ashland and Southborough stations. This would free up some parking constraints at the existing Framingham station. It is likely that these excess spaces may be filled by the residents of Framingham and Holliston. A more thorough analysis of latent demand at Framingham station is necessary to verify this conclusion."

53

"If the parking capacity at Southborough station is constrained to 420 spaces, then the demand at Ashland Station would be even higher, nearly 880 spaces in 2011. The parking demand at Worcester station would be around 350 in 2011."

In addition, the third scenario projects 1,670 spaces in Ashland and Worcester by 2011 which is higher that the I-495 and Worcester combination.

This reviewer feels this comments very disconcerting. Therefore, I strongly feel that this latent demand needs to be studied immediately and in conjunction with the final EIR. 54

In Table 3, the Ashland Station shows persons by trip origin totaling 946 for the year 2011 while transit trips in Table 2 is 523. This needs further explanation. 55

In Table 1, there is two references to Scenario 1 these need to be clarified and corrected. 56

In Table 40, entitled "Worcester Commuter Rail Extension Study, Highway Impacts", is very disturbing to the reviewer. We are talking about a total of a few thousand cars between Boston and Worcester for both Mass Pike and Route 9, it is doubtful that this will significantly change the total road volumes on these superhighways.

Noise and Vibration--Section 3.0

Is the Old Colony example truly representative of this commuter rail line.

In sub-section 2.1.2 on "pure tone sources" there is concern over the different criteria on noise impact assessment between the Massachusetts DEP Noise Policy and federal guidelines in light that Conrail and Amtrack horn blowing policies. In addition, best new technology should be used to minimize noise impacts rather than current equipment. 57

With regards to the 5dBa level parameters, these measures should be evaluated as well. 58

Archaeological Survey--Section 4.0

The historical maps of Framingham and Ashland should be replaced by more readable copies. 59

Next reference to Lloyd's Diner in Ashland is incorrect it is in Framingham opposite Keefe Tech. 60

Finally, I have some concern interpreting Table VIII and Figure VIII, the quality and referencing between the two should be improved. 61

LIST OF ALL COMMENT LETTERS ON NOVEMBER 1994 DEIR

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
Worcester Commuter Rail Extension Project
Draft Environmental Impact Report
EOEA No. 9154

CERTIFICATE AND COMMENT LETTERS

MEPA Correspondence

1.	EOEA DEIR Certificate	3-16-95
2.	Citizens Advisory Committee Comments on DEIR	11-9-94

State Officials and Agencies

3.	MA Senate/Senator Matthew J. Amorello	3-9-95
4.	MA Senate/Senator Robert A. Durand	3-6-95
5.	House of Representatives/Harriette L. Chandler	3-7-95
6.	Department of Food and Agriculture/Marcia Starkey	3-6-95
7.	MA Historical Commission/Brona Simon	3-9-95
8.	DEP Central Region/Mary J. Richards	3-9-95

Regional Agencies and Organizations

9.	Central MA Regional Planning/Carl Hellstrom	3-9-95
10.	MA Restaurant Association	2-5-95
11.	MA Audubon Society/E. Heidi Roddis	3-8-95
12.	Bicycle Coalition of MA/John Allen	1-22-95
13.	Metropolitan Area Planning Council/David Soule	2-28-95
14.	METROWEST/Charles E. Gaffney	3-7-95
15.	Assoc. for Public Transportation/Dennis Campbell	3-8-95
16.	MASCO/Robert Tassinari	2-16-95

City Officials, Agencies and Organizations

17.	MBTA Advisory Board Capital Planning Committee/Bernice Mader	3-8-95
18.	Preservation Worcester/Patrice O'Malley Hagan	2-27-95
19.	Worcester Office of Planning and Community Development/ Stephen F. O'Neil	2-24-95
20.	Union Station Alliance	3-9-95
21.	Andrew B. O'Donnell/Member Worcester Commuter Rail Task Force	3-9-95
22.	Worcester City Manager's Office/Thomas Hoover & David Forsberg	3-13-95
23.	Worcester Business Development Corporation/Thomas J. Andrews	3-9-95
24.	Millbury MBTA Advisory Committee/Brennan F. Wall	2-1-95
25.	Tufts University/Franklin M. Loew	2-24-95
26.	Grafton Board of Selectmen	3-6-95
27.	Southborough Board of Selectmen	3-7-95
28.	Westborough School Committee/Lydia DaSilva	3-1-95
29.	Westborough Planning Board/Richard Brady	2-21-95
30.	Westborough Board of Selectmen	3-6-95
31.	Westborough Police Department	2-27-95
32.	Westborough Historical Commission	1-10-95
33.	Westborough MBTA Advisory Committee	3-3-95
34.	People for the Ashland West Alternative/John Kelly	2-17-95
35.	Ashland Board of Selectmen	3-6-95
36.	Ashland MBTA Rail Committee	3-9-95
37.	Ashland Town Planner/Stephen Kerlin	3-9-95
38.	Ashland Office of Selectmen and Town Manager	11-22-94
39.	Framingham Planning Department	3-7-95
40.	Hopkinton Office of the Selectmen	3-8-95
41.	Hopkinton Appropriations Committee/John Woodward	3-8-95
42.	Newton Department of Planning and Development	3-2-95
43.	Wellesley Board of Selectmen	1-6-95
44.	Boston Redevelopment Authority	3-6-95
45.	Boston Environmental Department	3-8-95

Millbury - Citizen Comments

46.	Brennan F. Wall	2-17-95

Grafton - Citizen Comments

47.	Scott Rossiter	2-12-95

Westborough - Citizen Comments

48.	Larry Gomes	2-24-95
49.	Louis & Maureen Jankauskas	2-21-95
50.	Mary Fisher	2-24-95
51.	Mary Cullen	2-20-95
52.	Stephen & Charlene Henry	2-24-95
53.	Brian and Antoinette Kenned	3-7-95
54.	Mario Avelloni	3-3-95
55.	E. Thomas and Judith McCabe	3-6-95
56.	Sally Tajiani	3-5-95
57.	Janice and Alan Silvestry	3-5-95
58.	Rosemary Johnson	3-6-95
59.	Diane Power	3-7-95
60.	Dennis Cox	3-8-95
61.	Jacqueline and David Cox	3-8-95
62.	Robert Brais, Barbara Brais, Marie Brais	3-5-95
63.	Dorothea MacLeod	3-6-95
64.	Marvin Silver	3-7-95
65.	Barbara Reismann	3-7-95
66.	William and Mary Anne Coveney	3-6-95
67.	Jane and Richard Dunphy	3-4-95
68.	Joseph Orlando	2-20-95
69.	Elizabeth Colbert	2-22-95
70.	Joseph Harrington	2-14-95
71.	Mrs. Paul Smith	2-21-95
72.	Helen and Bill Panas	2-17-95
73.	William Murphy	2-8-95
74.	Jennifer Speed	3-7-95
75.	Bruce Johnson	3-6-95
76.	Cheryl and Paul Crivello	2-28-95
77.	Susan Stager	2-26-95
78.	Ellen Gugel	1-19-95
79.	Barbara Sullivan and Fran Lynch	1-29-95

Southborough - Citizen Comments

80.	Richard Fournier, Jr.	3-5-95
81.	James Knowles	2-23-95
82.	Peter Venuto	2-23-95
83.	Patricia Pirozzi	2-14-95
84.	James Waddell	2-14-95
85.	Russell Fustino	10-4-94

86. Jane Fedorowicz and Michael Golibersuch 2-8-95
87. Anne Huff 1-8-95
88. Judith and Thomas Little 2-2-95

Ashland - Citizen Comments

89. Burnam's Supper House/Daniel Giargiari 3-3-95
90. Nelson Holden 3-6-95
91. Claudia Lefter for Nelson & Martha Holden 2-8-95
92. Citizens Lefter, Leacu, Camille, Holden 3-7-95
93. Ellen Giargiari 2-28-95

Hopkinton - Citizen Comments

94. John Woodward 1-6-95
95. Andrew and Teresa Boyce 2-2-95

Boston - Citizen Comments

96. Keith Davison 3-3-95

Unknown Communities - Citizen Comments

97. Dorothy McMahon 3-7-95
98. Jackie Adams 3-6-95
99. Julia McTigue Jacobs

NOTICE OF PROJECT CHANGE, MAY 12, 1995

Massachusetts Bay Transportation Authority

William F. Weld, Governor | Argeo Paul Cellucci, Lieutenant Governor | James J. Kerasiotes, Secretary and MBTA Chairman | Robert L. Mabardy, Interim General Manager

May 12, 1995

The Honorable Trudy Coxe, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street, 20th Floor
Boston, Massachusetts 02202

Attention: MEPA Unit

Re: Worcester Commuter Rail Extension - EOEA #9154
Notice of Project Change to Prepare Two Separate
Final Environmental Impact Reports (EIRs)

Dear Secretary Coxe:

The Massachusetts Bay Transportation Authority (MBTA) Draft Environmental Impact Report to extend commuter rail service to Worcester was found by you to comply with the Massachusetts Environmental Policy Act and with its implementing regulations on March 16, 1995. The Worcester Rail review is being carried out as a Major and Complicated Project under the control of a Special Procedure. Under the provisions of the Special Procedure, the MBTA is allowed certain discretion in filing multiple Final EIRs for the project. In your recent Certificate, as in the October 8, 1992 Certificate establishing the Special Procedure, you point out the advantages of filing separate and sequential Final EIRs for the project.

Accordingly, we seek by this letter your permission to prepare and file two separate Final EIRs for this project. Under the provisions of the Certificate of the Secretary of Environmental Affairs on the Notice of Project Change dated January 14, 1994, the MBTA initiated interim service to Worcester in September, 1994. While the interim service has been successful in attracting ridership, relatively complicated dispatching has been required along the single track section of the line. It also has been necessary to utilize, on a temporary basis, layover facilities in a Providence and Worcester Railroad Yard in Worcester. Use of this area has resulted in complaints from abutters. To expedite transfer to the permanent layover facility and to simplify dispatching operations, the MBTA proposes to prepare a first Final EIR immediately for the track and other rail corridor improvements and the layover facility.

There remain, however, unresolved questions pertaining to final determination of immediate station locations in the communities between Worcester and Framingham that make preparation of a Final EIR for those elements impractical within the same timeframe as the track improvement/layover facility EIR. The MBTA proposes to treat these matters in a second Final EIR.

The approach just outlined will not cause any inadvertent shift or increase in environmental impacts. Each of the proposed Final EIRs will provide an introductory description of the project as a whole so that context can be maintained. In addition, we suggest below the particular topics to be considered in each document. We hope that you agree with us that this approach will provide for the greatest environmental benefit and offer the greatest opportunity for informed public comment.

PROPOSED TRACK AND LAYOVER FINAL EIR

The first Final EIR is intended to deal with the questions surrounding the permanent layover facility in Worcester and the construction of the rail and signal improvements needed for two-track operation of the line between Framingham and Worcester.

Track/Corridor Improvements

The Draft EIR discussed proposed improvements to the rail corridor necessary to accommodate the combined use by MBTA commuter rail trains, Amtrak passenger service, and Conrail freight. While the major focus of the track bed improvements consists of restoration of a 7-mile section of double track between Westborough and Worcester, an additional 3-mile section of existing track in Worcester must be upgraded for use as a mainline track. Geometric improvements to the remainder of the corridor, to allow for increased speed limits, and measures to increase overhead clearances at several bridges also were discussed. Operational and safety issues such as signal and communication system upgrades and fencing also were described.

Very few of the comments received on the Draft EIR concerned these aspects of the project. Subsequent to circulation of the Draft EIR, as design progressed on corridor improvements, it was determined that an additional 1.5 miles of storage track is necessary immediately west of Union Station in Worcester to replace storage track being upgraded for mainline use east of Union Station. Construction of this storage track in an urban setting is not expected to involve work outside the right-of-way, nor to lead to adverse environmental effects. The MBTA plans to include a discussion of the effects of this additional work within the scope of the Final EIR for the Track and Layover Facility. The reconstruction of the Route 85 railroad bridge in Southborough will be included also.

Layover Facility

The Draft EIR presented a thorough discussion of the layover site selection process and evaluation criteria resulting in the choice of a preferred site. The Draft EIR also presented an overview of the facility layout, including new trackage, access driveways, electrical substation, maintenance building, and site drainage. Potential impacts of the layover facility operations were addressed, including traffic, air quality, noise and vibration, drainage and hazardous materials, and possible short-term impacts from construction. Mitigation options were set forth where appropriate.

Comments received on the Draft EIR expressed concerns regarding noise and vibration, the possibility of additional track alignment alterations after renovation of Union Station is completed, access and parking questions, and mitigation matters.

The Final EIR will carry forward the Draft EIR discussions of the track and corridor improvements and the layover facility, report on any changes in design or anticipated effect since the Draft EIR was reviewed, and set forth the MBTA's proposed mitigation of any unavoidable impacts.

Response to Comments

The response to comments section of the Track and Layover Final EIR will address each comment raised about these matters in the Draft EIR Certificate, in the CAC's Draft EIR comments, and in the additional comments submitted.

PROPOSED RAIL OPERATIONS/STATION CONSTRUCTION EIR

The second Final EIR is intended to address all remaining questions other than those dealt with in the Track and Layover Final EIR. The key areas are the projections of ridership for basic service, the noise and vibration effects of rail operations, and station siting and construction questions.

Rail Operations

The primary focus of this section of the second Final EIR will be on the elements of, and potential impacts from, the implementation of the basic service commuter train schedule presented in the Draft EIR. The impact from noise and vibration will be further assessed and, where appropriate, mitigation will be proposed. The MBTA will provide a further discussion of its financial capability to operate this service without adversely affecting its services elsewhere. Additional light will be shed on existing transportation networks and mode choice factors. The MBTA has had the opportunity to assess the impact of interim service on other HOV modes and will present these data along with any needed additional evaluation of ridership projections in the Final EIR.

Station Construction

The MBTA is continuing to work with CAC and representatives of the five communities in which intermediate stations are proposed to finalize site selection. The Draft EIR presented impact analyses for fixed station locations (in Grafton, Westborough, and Southborough) and for stations which have alternative sites (in Millbury and Ashland). With the filing of this Final EIR, a firm presentation will be made on the number and location of stations to be built and specific details of each station will be provided. The Final EIR will include a station by station discussion of potential environmental impacts and proposed mitigation. Potential archaeological, historical and agricultural impacts also will be examined. A timeframe and sequencing for station construction will be presented, having as its goal a smooth transition from interim to basic service. Concerns have been expressed in Draft EIR comments that traffic patterns could be adversely affected if adjacent stations are not developed in the same timeframe. Traffic patterns will be addressed by the MBTA in the Final EIR on a station by station basis.

Regional Station Analysis

The Legislature directed the MBTA to complete a report on a regional station as part of the recently passed Transportation Bond Bill. To respond to this requirement, the MBTA will engage an independent consultant to assess the potential for, costs of, and benefits of a regional station in the vicinity of Route 9 and I-495. The operations/stations Final EIR will summarize the results of this report. The MBTA will, as it has in the past, carefully consider the concerns and arguments raised about a regional station during this and other reviews and will discuss the ongoing regional station analysis with the CAC.

Response to Comments

For this second Final EIR, a response to comments section will address comments, other than those on track and layover matters, raised in the Draft EIR Certificate, in the CAC's Draft EIR comments, and in additional comments submitted. Here, however, given the bulk of comments and the similar subject matter of many of them, the MBTA proposes to prepare a consolidated "Response to Commonly Raised Questions" as a part of the response to comments chapter. If this is acceptable, most comments can be dealt with effectively and without repetition. We also propose to use an index table to direct commenters to responses in the body of the text and to respond directly to singular comments that are not dealt with in the response to commonly raised questions or elsewhere in the text.

PROCEDURAL MATTERS

The lapse of time since the drafting of the original Special Procedure, the experience gained by the MBTA in the review to date, the sheer bulk of the comments on the Draft EIR, and the fall off in attendance at Citizens' Advisory Committee meetings, together lead the MBTA to request three procedural changes. We propose to: broaden and revivify the CAC; circulate the comments on the Draft EIR once instead of twice; and provide a review period appropriate to the scale of each of the two proposed Final EIRs.

Citizens' Advisory Committee (CAC)

Comments from Hopkinton and from Framingham have requested that each be granted a seat on the CAC. The MBTA has no objections to this request and asks that the Secretary consider inviting each community to designate a representative. Simultaneously, the other communities on the CAC might be asked to confirm their designee or make a new designation so that those members who either have lost interest or no longer have the time to participate may be replaced by more active community representatives.

Distribution of Draft EIR Comments

Given the bulk of the commentary received on the Draft EIR--some 500 pages--the MBTA seeks your permission to distribute the entirety of the comments one time, with the Final EIR on Operations and Stations, to all commenters and interested parties on the circulation list. The comments on the track work and the layover facility are sufficiently few that they can be abstracted and quoted directly in the Response to Comments section of the Track and Layover Final EIR. These responses then can be incorporated into the index table that will accompany the Operations and Stations Final EIR so that a complete response to comments can be had in one document.

Filing Schedule and Review Periods

The MBTA anticipates filing the Track and Layover Final EIR with MEPA in May or June, 1995, and requests a public comment period of thirty (30) days. Current expectations are to file the Rail Operations and Station Construction Final EIR by the end of this year. A sixty (60) day public comment period will be requested.

CONCLUSION

The MBTA looks forward to your consideration of and favorable action on this request, and stands ready to respond to any questions that you might have or to consult with you and other interested parties on this proposed way of going forward. Please telephone Andrew Brennan at 617-722-3126 if you need further information, or if consultation is needed.

Sincerely,

Robert L. Mabardy
Interim General Manager

MEPA CERTIFICATE ON NOTICE OF PROJECT CHANGE, JUNE 22, 1995

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street, Boston, 02202

WILLIAM F. WELD
GOVERNOR
ARGEO PAUL CELLUCCI
LIEUTENANT GOVERNOR
TRUDY COXE
SECRETARY

Tel: (617) 727-9800
Fax: (617) 727-2754

June 22, 1995

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS ON THE NOTICE OF PROJECT CHANGE

PROJECT NAME	:	Worcester Commuter Rail Extension
PROJECT LOCATION	:	Statewide
EOEA NUMBER	:	9154
PROJECT PROPONENT	:	Massachusetts Bay Transportation Authority (MBTA)
DATE NOTICED IN MONITOR	:	May 23, 1995

Pursuant to the Massachusetts Environmental Policy Act (M.G.L. c. 30, ss. 61-62H) and Section 11.17 of the MEPA regulations (301 CMR 11.00), I have reviewed the Notice of Project Change (NPC) submitted on the above project, and hereby approve the requested change in the Special Procedure for environmental impact review. The Special Procedure was developed for the Worcester Commuter Rail Extension Project in October 1992, pursuant to the MEPA regulations' provisions for designation of Major and Complicated projects. The NPC was filed in accordance with that procedure and in response to the March 16, 1995 Certificate on the Draft Environmental Impact Report (DEIR).

In the NPC, the MBTA requests permission to prepare and file two separate Final Environmental Impact Reports (FEIRs). The first FEIR would focus on proposed track and corridor improvements and on a permanent layover facility in Worcester. The second FEIR would address all remaining issues, and would include sections on rail operations, station siting and construction, alternatives, ridership, revenue issues, and the feasibility of a regional station. The NPC also requests the redesignation of Citizens' Advisory Committee (CAC) members (and the addition of representatives from Hopkinton and Framingham), a single distribution of comments on the DEIR, and a sixty day review period for the Rail Operations and Station Construction FEIR.

Final Environmental Impact Reports

The MBTA presents convincing reasons for filing two separate and sequential FEIRs. The March 1995 DEIR Certificate included a scope for both FEIRs. The MBTA's approach to addressing that scope, as discussed in the NPC, generally is satisfactory. Because the Operations/Station FEIR is intended to address any issues that are outstanding after the submittal of the Track/Layover Facility FEIR, the Certificate on the Track/Layover Facility FEIR will summarize remaining concerns that must be addressed in the Operations/Station FEIR. The Operations/Station FEIR also must include a response to comments on the Track/Layover Facility FEIR (and to the comments received on the current NPC), as well as the main response to comments on the DEIR (see "Procedural Matters", below).

Since the review of the DEIR, the MBTA has identified the need for an additional 1.5 miles of storage track west of Union Station in Worcester. This track was not included in the DEIR, and should be fully analyzed in the Track and Layover Facility FEIR. The reconstruction of the Route 85 railroad bridge in Southborough also should be included in that document.

The NPC proposes to include a summary of the report to the Legislature on the feasibility of a regional station in the Operations/Station FEIR. In the Certificate on the DEIR, I requested that the full report be made available for public comment through a notice in the Environmental Monitor. I reiterate that request, and encourage the MBTA to take account of public comment before it makes a final decision concerning the location of intermediate stations.

The Operations/Station FEIR should include a separate chapter that summarizes mitigation measures for the entire project. That chapter must include a Draft Section 61 Finding for all state permit areas. The Draft Section 61 Finding should contain clear commitments to mitigation, an estimate of the cost and funding source for each proposed mitigation measure, identification of the parties responsible for funding and/or implementing each measure, and a schedule for implementation of the mitigation.

Procedural Matters

Citizens' Advisory Committee (CAC). The CAC, which was appointed in 1992, includes representatives from the towns of Ashland, Grafton, Millbury, Southborough, Westborough, and the City of

Worcester, as well as designees of several transportation and planning organizations. The CAC has provided valuable assistance to me in the review of previous project documents, and I thank its members for their efforts.

Given the length of time that the CAC has had to work on this project, and the amount of effort that will be required in the FEIR phase, it seems appropriate to update membership. I will be asking the communities and organizations that have CAC representatives to either confirm their current designees or nominate new members in the next few weeks. In addition, I will expand the CAC membership to include representatives from Framingham and Hopkinton. A notice will be placed in the Environmental Monitor concerning the redesignation process. The current CAC will continue to operate until the redesignated CAC is appointed.

Distribution of Draft EIR Comments. Over 500 pages of comments from nearly 100 individuals and organizations were received on the DEIR. Most of these comments concerned station and operational issues, with relatively few discussing potential track and layover facility impacts. Because of the volume of comments, the MBTA has requested permission to distribute the DEIR comments and the full response to comments only with the Operations and Stations FEIR. Comments that are specific to the track and layover facility would be included in the first FEIR. I agree that a single distribution of comments makes sense in this case, and therefore grant permission to the MBTA to proceed in the manner described in the NPC.

Filing Schedule and Review Periods. The MBTA indicates that it will request an extended comment period of 60 days for the Operations and Stations FEIR, with a standard 30 day comment period for the Track and Layover FEIR. Given the intensity of interest concerning operations and station issues, the extended review period for the second FEIR is appropriate. At the current time, the MBTA anticipates that the first FEIR will be filed in the summer of 1995, with the second FEIR to follow at the end of the year.

June 22, 1995
DATE

TRUDY COXE
Trudy Coxe

Comments received : Framingham Planning Department, 6/12/95
TC/JGH/jh

TOWN OF FRAMINGHAM, MASSACHUSETTS

PLANNING DEPARTMENT

Memorial Building, Room B2
Framingham, MA 01701

Main Office: 620-4852
Housing Rehab Office: 620-4855

RECEIVED
JUN 13 1995
MEPA

ARTHUR T. NOONAN
Planning Director

June 12, 1995

Ms. Trudy Coxe, Secretary of Environmental Affairs
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Attn.: MEPA Unit

Re: EOEA No. 9154

Dear Secretary Coxe:

The Framingham Planning Department has reviewed the Notice of Project Change to Prepare Two Separate Final Environmental Impact Reports, dated May 12, 1995, submitted by the MBTA for the Worcester Commuter Rail Extension project. The Planning Department submits the following comments:

We have no objection to the submission of two FEIRs for this project. However, although Framingham will not be a new station in the extension project, the proposed extension will impact directly on the town in almost as many ways as if it were to be a new station. Impacts of the commuter rail extension upon the Town were discussed in the DEIR very slightly, with the justification that the MBTA had "under study, a separate project to be filed with MEPA, proposed improvements to the existing Framingham Station." [page 18-1] However, an EIR will not be filed for this project as the MBTA agreed to move rather than to demolish the outbound station canopy listed on the National Register of Historic Places.

In the Certificate for this project issued September 22, 1994 (EOEA #10106), you state that Metrowest, MAPC and the Town of Framingham "note that the addition of express trains from Framingham to Boston associated with the upcoming Worcester Extension will likely increase ridership boarding at Framingham. I agree that this new express service will make the Framingham Terminal more attractive to commuters and may increase the traffic impact and parking demand in the immediate Terminal area. Because the ENF focused on the traffic impact related to the Phase I addition of ten parking spaces, rather than on the impact of the additional service availability in conjunction with the additional parking, I agree that the traffic impact at the Terminal may have been understated in the ENF."

Thus, as only a Notice of Project Change will be filed for the Terminal project, its separate status and earlier start date does not assist in the elucidation of service and other impacts of the Worcester Commuter Rail Extension Project. Therefore, we feel that, for the Commuter Rail Extension EIR, Framingham should be treated with the at least the same weight of analysis in terms of noise, gate closings, impacts on traffic, parking and mitigation as will be the new stations coming on line.

Sincerely,

Heli Meltsner

Heli Meltsner
Senior Planning

CITIZENS ADVISORY COMMITTEE (CAC) COMMENTS ON FEIR, JULY 27, 1995

Worcester Commuter Rail Extension Project
Citizens Advisory Committee

Date July 27, 1995

To Secretary of Environmental Affairs

From Citizens Advisory Committee

Subject CAC Comments on Track and Layover FEIR, EOEA #9154

Following are the CAC's comments on the Track and Layover Final Environmental Impact Report (FEIR) for the Worcester Commuter Rail Extension Project, submitted for publication as part of the FEIR. Some general comments are presented first, followed by specific comments in order of the relevant section's appearance in the FEIR, followed by a few miscellaneous comments.

General Comments

Relationship to Station Designs

This FEIR assumes that there is no regional station in the I-495/Mass Pike area, and that the intermediate station designs are more or less as outlined in the Draft EIR. The CAC's review of this FEIR makes those same assumptions. It is important to recognize that subsequent to the Secretary's acceptance of this FEIR, design changes to elements of the project covered by a later FEIR (e.g., intermediate or regional stations) might require changes to some of the project elements covered by this FEIR. Any such changes to project elements covered by this FEIR must have their environmental impacts analyzed in that later FEIR.

Analysis of Impacts of Train Operations

The CAC recognizes that the environmental impacts of train operations are only partially covered by this FEIR. In particular, the only operational impacts analyzed in this FEIR are those directly tied to the track and layover facility construction (e.g., vibration, for which mitigation must be part of track construction). The CAC finds this division of analysis somewhat confusing, although clearly permitted by the Secretary's certificate on the Notice of Project Change. Because the analysis is split between FEIRs, the CAC wishes to stress the importance of careful preparation and review of the later FEIR, to make sure that *all* impacts of train operations have been analyzed. The CAC further notes the need in the later FEIR to consider the noise impacts of operations both with and without the intermediate stations.

For the most part, the CAC does not at this time comment on operations impacts other than those specifically addressed in this FEIR. However, the CAC has included a few comments here that were prompted by material in this FEIR but may be more relevant to the later FEIR. These comments should be addressed by the later FEIR if they cannot be addressed in the context of this FEIR.

Section 1.0 Project Overview

Section 1.1 Proposed Project

The definition of the catchment area seems inconsistent. As noted on page ES-6 of the FEIR, "The MBTA estimates that patrons for the Worcester Extension service will be drawn from towns whose centroids are approximately six miles or fewer from the rail line, and from not much beyond ten miles from the rail line." Several of the twenty-eight communities shown in Figure 1.1-3 have centroids well beyond six miles from the rail line, and in some cases almost the entire town is ten or more miles away. Either the definition of service area or the actual service area used for this project analysis should be revised so that they are consistent with one another.

The statement is made that "a regional station is not proposed as part of this project." In light of the subsequent statement that the result of a regional station study will be reported in the later FEIR, this raises a question: is the regional station not a part of this FEIR, or is it not a part of the Worcester Extension project as a whole?

Section 1.2 History of Project

The second paragraph should recognize that the CAC was made up not only of representatives of the communities proposed to have stations, but also members of additional groups having an interest in the project.

Section 1.3 Permits and Approvals

The CAC deems it important to assure continued community involvement in this project once the FEIR has been accepted by the Secretary. This concern raises two questions about statements made on page 1-10:

- The first paragraph of Section 1.3 is unclear about the ongoing coordination with the towns and the CAC following the completion of the MEPA review. In particular, the paragraph implies a continued involvement of the CAC following the FEIR review, but a CAC does not normally continue to function as a CAC following completion of the FEIR. The MBTA should clarify the continued coordination regarding final design, permitting and construction.
- Construction contract specifications embody some important items such as noise limits, hours of operation, and truck routes, but are not developed in time for review within the MEPA process, leaving the communities without a means of addressing these items adequately. It is the understanding of the CAC that the MBTA intends to address this concern through the Section 61 process, which will provide for the MBTA and the community to enter into a formal agreement concerning such items. This intention of the MBTA should be documented.

The FEIR should explain what a "notice of construction" is, for EPA and DEP. What triggers the necessity to file for these permits?

Section 2.0 Selection of Preferred Alternative

Section 2.1 Alternatives Considered

On page 2-15, the cost of a bus is given as $275,000. One member of the CAC is involved in setting up an electric bus shuttle, which is much more expensive than diesel, and is seeing quotes of $175,000 per bus (including extra battery packs for heat and air conditioning). This raises the concern that the MBTA is artificially inflating the cost for the bus alternative. Supporting data should be provided for the FEIR's bus cost estimate.

Also regarding the bus alternative, there is no reason to assume that a bus pick-up site would be the same as a rail station site. While a rail station site is limited to locations adjacent to the

railroad tracks (for obvious reasons), a bus stop is more commonly placed along a major commuter road.

Section 2.2 Financial Feasibility of Preferred Alternative

The FEIR states that the project is included in the financially constrained regional TIP. This is not quite correct. The project is listed in the TIP for air quality conformity discussions, but the expenditure of funds on the project is not included in the TIP. The project needs to be listed in the TIP, as does the remainder of the MBTA's non-federal aid program, to ensure that the region has a comprehensive implementation program for transportation projects.

The report also notes that funding for the Greenbush project' is less sure than for the Worcester Extension. It is unclear why this should be so, since the Greenbush extension of the Old Colony is clearly a higher regional priority and attracts a larger number of new transit riders to the regional public transportation system.

Why is the Worcester Regional Transit Authority (WRTA) not financially participating in this extension, when four of the proposed stations are within the WRTA boundary?

The CAC is informed that the MBTA is now subsidizing Peter Pan in connection with the Worcester Extension, and is likely to continue doing so. The FEIR should include this subsidy in the financial analysis.

Section 3.0 Project Elements

Section 3.1 Railroad Right-of-Way

Duplication of Project Description

Beginning with approximately the second full paragraph on page 3-2, the rest of the section should be moved to Section 4 under its own separate headings, the same as was done for the drainage and wetlands portions of Section 4. This portion of Section 3 covers much the same material as does the first page of Section 4, but the level of detail is different. It seems more appropriate to describe the work once, in detail, at the beginning of Section 4.

Relationships With Other Projects

The CAC has concerns about possible conflicts between the Worcester Commuter Rail Extension track construction and other construction work, proposed by Conrail and the Massachusetts Highway Department, to lower track or raise bridges to provide vertical clearance for double stacking, and any bridge renovation. Lack of coordination among these projects could result in a waste of resources or in the projects interfering with one another. The FEIR should discuss any coordination that has taken place or is expected to take place, to demonstrate that any potential conflicts have been or will be considered.

As a particular illustration of the potential for the projects to interfere, it should be noted that lowering track by a few inches will have an impact extending hundreds of feet to each side of the point where the track is lowered. This is due to the federal requirement that a train be able to start on any inch of the track. It is the CAC's understanding that a train cannot stop or start on a grade greater than 1%, and that the requirement is actually that one foot of vertical change results in 1000 feet of horizontal change. Thus, to lower the track at the Fountain Street bridge by 16 inches, 1,333 linear feet of track work will be required. Why repair the track now only to tear up that work within a short time?

The CAC has asked the MBTA to clarify the status of the Fountain Street bridge in Ashland, especially regarding the MHD bridge renovation schedule.

Section 3.5 Construction Costs

Who owns the layover site? Table 3.5-1 shows an acquisition cost, but if Conrail owns the site, the property improvements should be a satisfactory quid pro quo.

Table 3.5-1 shows $6 million for acquisition of the five station sites. How is this estimate supported, given that these sites are prime commercial properties and, in some cases, already developed.

The single number of $1.7 million for bridge, wall and repair work should be broken out into more detail.

Section 3.6 MBTA Mitigation Policy

It should be noted that the stated 2% cost policy for noise and vibration mitigation has no standing with MEPA or the courts.

The budget shows $1.2 million for noise and vibration mitigation, but this FEIR reaches the conclusion that no mitigation is needed. Do we therefore conclude that $1.2 million will be spent to mitigate noise and vibration from the stations?

The FEIR provides mitigation *proposals*, but not *commitments*. When, if not in the FEIR, will mitigation commitments be made?

The term *significant* in the last sentence of the second paragraph should be more clearly defined.

Section 4.0 Environmental Impacts – Railroad Right-of-Way

With respect to information such as architectural and archaeological impacts, this FEIR is too early. With incomplete architectural and archaeological surveys, the FEIR cannot adequately disclose any architectural and archaeological impacts of the track replacement or the Route 85 bridge renovation. In particular, the MHC position on the historic character of the bridge is important, in that it may either allow or preclude the replacement of the granite abutments with poured concrete. If such potential impacts are not disclosed in the FEIR, where will they be addressed?

At the bottom of page 4-1 a reference is made to structural damage as a vibration impact. While Section 4.3 shows that structural damage is not the only vibration impact considered, the statement on page 4-1 leads one to believe that it is. This statement should be clarified.

Section 4.1 Local Traffic

Ballast

The FEIR is rather sketchy about some details of the ballast work that can and should be provided in the FEIR. In particular, the following questions should be answered:

- Where will the ballast improvements occur? Will ballast work be done all along the track, or just at the new siding, double track installation, second track repair and old siding? The FEIR should show the location of all ballast work on a map, for clarity.
- Where are the staging areas for the ballast work?
- How much excavate will be removed, from where, and how? Where will it be shipped and by what mode?
- How much ballast will come in by truck? Why by truck? How many trucks? How much by rail?

Knowing where ballast work is planned, the MBTA ought to be able to make some estimates for the volume of material to be excavated and the volume of ballast to be brought in.

Route 85 Bridge

Although this FEIR does not address the design of the intermediate stations, this FEIR does include one specific element that is impacted by the design of an intermediate station: the Route 85 bridge in Southborough. Because the bridge is adjacent to the station site, the design

of the station, and in particular the height and location of the platforms, may have a significant impact on the bridge.

The CAC understands that it is now planned that the platform at the Southborough station will be moved away from the back of two residences and moved east back to commercial property. Since the low platforms now planned for the station will not work with Conrail specifications for bridge replacement, 800-foot platforms come into conflict with the bridge. It is the understanding of the CAC that the MBTA intends to design the Southborough station with reduced-length platforms in order to keep the platform away from the two residences while at the same time avoiding interference with the bridge. The MBTA should confirm this intention in writing.

Several specific questions should be answered:

- How wide will the bridge opening be when completed?
- Will the high volume, peak hour commuter traffic be able to go under this bridge during construction?
- What will be the new traffic pattern after renovations are completed?
- What will be the width of the rail bed and the bridge surface when construction is completed?
- How will the work impact the restaurant that is located within six feet of the bridge?
- The FEIR notes the existence of some dispute over the vertical clearance of the bridge. How will Southborough be involved in the resolution of the dispute, and how and when will Southborough know the final outcome?
- If the vertical clearance of the bridge is increased, what will be the impact on Route 85 traffic due to the addition of trucks that would then be able to clear the bridge?

Section 4.2 Air Quality

This FEIR defers air quality analysis to the later FEIR. But since the alternatives discussed in the DEIR, and in section 2 of this FEIR, show the bus alternative to have better air quality impacts, then the air quality impact should be fully analyzed now, before we construct rail improvements and then decide that the air quality impacts or improvements are not cost-effective.

Section 4.3 Noise and Vibration

Speed

The FEIR should include a map showing the anticipated speed of the trains along various segments of the route. This would be of significant help in understanding the impacts and the claims of no impact at various points. Where will the train be reaching speeds of 70 mph? Where will they slow to approach a station? What is the speed within one mile of a station?

These speeds play a major role in determining vibration impacts. The FEIR shows different vibration results in different towns, despite similar proximities of structures to the right-of-way. Is speed or soil geology the factor that makes the difference? One cannot tell from reading the FEIR.

If speeds are indeed to be as great as 70 mph, as noted in Section 1.1, why then are the vibration models done with a speed of 60 mph? If speed is such an important variable, why was it underestimated by 10 mph, and how much does that impact the vibration results?

Vibration

The FEIR notes that vibration impacts are difficult to model, and that there might be residual vibration despite good maintenance. The obvious conclusion is that there may be significant

vibration impacts in spite of the FEIR's conclusion that there will be none. What is offered as a safety net to help the property owners and towns if more structures than predicted experience vibration impacts, or if the severity of vibration is stronger than predicted?

Despite the presence of 37 residences within the 50-foot impact zone along the right-of-way in Southborough, no test readings were taken in Southborough. Given the stated difficulties with the model and demonstrated variations in test readings, test readings should be taken within each specific area within each town where there are potentially affected structures. Extrapolating from one town to another does not yield credible results in the face of such variability.

Commercial Property

Southborough and the CAC have repeatedly asked that vibration and noise analysis be done for commercial, as well as residential, properties in the vicinity of the project. This is of concern for the other towns as well, wherever the right-of-way abuts commercial property. For example, in Southborough the Ipanema Restaurant is almost on the tracks and Fitzgerald's store is within 50 feet of the centerline of the track (i.e. within the impact zone). While it can be argued that some commercial property (e.g., a factory) is certain not to be adversely affected by the noise and vibration from a commuter train, a restaurant and a general store have many of the characteristics of a residence in terms of their vulnerability to noise and vibration. Towns cannot afford property tax loss if noise and vibration harms these properties.

Impacted Structures

The count of 19 affected structures is inconsistent with the details shown in Table 4.3-2. The bottom line of that table misses one affected structure in Millbury and two in Worcester.

There is insufficient information presented to support the data shown in Table 4.3-2. It is not clear how the "Distance to Vibration Impact" was determined in each row of the table. Several members of the CAC point out that they are aware of more residences within the stated distances at various points than are listed in the table, including at least one house in Hopkinton that is quite close to the right-of-way. The MBTA should work with the communities to validate and update the data in this table.

The FEIR should include a map showing all properties (residential and commercial) within 50 feet of the right-of-way, for noise and vibration analysis, and within 200 feet regarding noise from bridge construction.

Vibration Mitigation

The statement that no mitigation is necessary is not well-supported. The cost of alternatives is discussed, but the actual or potential impact upon the homes is not clearly described. The FEIR should explain why properties within the impact zone are not impacted.

Given that a regular maintenance program of wheels and trackbed is the proposed vibration mitigation, how will such a program be assured? Does the MBTA have established practices, policies or procedures in place today to assure this? Is there an independent quality assurance organization and program in place to assure this?

Construction Impacts

The FEIR should examine the impact that various construction projects will have on existing train services (Conrail, Amtrak, and Interim Commuter Rail) to use tracks and meet current schedules.

Bridge Construction Noise

Using data from a 1978 noise model is unsatisfactory—it is 17 years old. More recent work should be found, or original research should be done.

While no residences are located within 200 feet in Southborough, there is one residence within that distance in Hopkinton. The FEIR should take note of this, and analyze the possible impact of bridge construction noise upon that residence.

Section 4.4 Right-of-Way Drainage

Culvert C-10 is described inconsistently. On page 4-28 it is said to be concrete, while on page 4-48 it is said to be steel.

Section 4.5 Wetlands

Wetlands were identified and impacts examined for the length of the track replacement, but not in the area of the Route 85 bridge. Since that bridge is part of the work covered by this FEIR, this FEIR should examine the wetlands in the vicinity of that bridge. The Sudbury River abuts the station site and thus the rail line. Will the bridge work cause sedimentation into the river?

For much of the way from MP 22 to MP 29, the right-of-way runs close to the Sudbury River. One particular area of concern is the Fruit Street bridge, where the river and the tracks are so close that a single bridge crosses both; this site is also just downstream from Cedar Swamp. The track from MP 22 to MP33 is indicated as being subject to track upgrading (replacing ties where necessary and resurfacing to support higher speeds), but no wetlands impact analysis is done for this portion of the proposed work. Although this work seems very minor in nature, the FEIR should at least touch on it and consider whether it may, in any particular area, have the potential to impact the river.

Section 5.0 Alternative Layover Facility Sites

We believe an alternative layover site has been overlooked that would meet more of the MBTA's criteria than the one selected. This alternative site could be less expensive to build, provide considerably better operating flexibility for MBTA trains, eliminate potential complaints of noise from the residents of the Mt. Carmel apartments, and provide Conrail with additional long-term storage space they have indicated they need.

The proposed layover facility has a number of disadvantages. First and foremost, it is not double-ended. In the event of switch or signal failure at the single access point, trains could be delayed or, in a worst-case scenario, annulled entirely. Any train passing over that switch prior to the morning departure of equipment from the facility is a potential cause of disruption. Should a main line train passing the area derail, break down, be held by signals at CP43 or CP45, or be delayed by any other occurrence a railroad can experience, departure(s) from the facility could be adversely affected. It is extremely desirable to have two access points to any layover facility, if at all possible.

The proposed facility will be created by building a retaining wall on the south side of the facility to replace the sloping embankment that now exists. This wall is necessary to support the subgrade of the main line tracks. It will be roughly thirty feet high. We suspect it will effectively block the dispersion of noise from the diesel engines which will be parked at the west end of the facility tracks and will act as a "bounce-off" point for all of the noise from the facility, directing that noise toward the Mt. Carmel apartments, leading eventually to complaints from the residents.

The MBTA has said that the installation of "hotel" power electrical units to plug in the train sets when they are in a layover status has resolved the problems of complaints at the current temporary facility. That is not quite correct. On more than one occasion, local residents have come to the facility and angrily demanded that the engines be shut down during the morning start-up and test period because of the noise. The MBTA utilizes "hotel" power this way at every layover facility on the system, and still receives complaints from residents in the areas about noise when the diesels are started in the early morning hours. The Bradford, Franklin and Needham layover facilities are examples of such problems.

The tracks at the proposed layover facility will be barely adequate to fit a maximum size train between the clearance point of the adjacent track(s) and the bunter (a device anchored to the track at the point the track ends, to prevent trains from running off the end of the tracks). Adverse weather conditions can make train operations more difficult in a confined space. When the rail becomes slippery due to wet leaves or ice and snow buildup, braking coefficients decrease between steel wheels and steel rails. The lack of even basic "working room" when handling a thousand tons or more of train does not appear to be a good design.

The MBTA proposes to include an air compressor in the facility to reduce the necessary idling time when the equipment is started in the morning. The compressor will be used to charge the air brake systems of the trains instead of utilizing the on-board compressors which require the engine to be running. This compressor will save approximately ten minutes per train of idling time. We believe this unit is being installed specifically in an attempt to forestall complaints of noise. The fact remains, however, that the engines *will* be running in the facility for a period of time, regardless of whether this compressor is used, and the complaints *will* ensue. The cost of the unit should be weighed against its benefit.

Access to the facility will be through an interlocking of switches and signals, probably known as CP44, which will connect the facility trackage with the main line(s). If any of the train sets stored at this facility were to fail the morning start-up or required tests and not be able to go to Boston on its own power, the only alternatives would be to leave the set in the facility until a rescue set could be dispatched from Boston after the rush hour or to double two sets together for the trip to Boston.

(The reader should be aware that when equipment fails to start or cannot pass a federally required test at an outlying point, the failure is often sufficiently severe that repair cannot be made at the outlying point. The light repair and inspection crews at these locations are not equipped to make repairs to correct major failures. Such failures are rarely repairable outside of full maintenance facilities, which exist only in Boston.)

Doubling two sets together is possible, but is a time-consuming task that would tie up the main line while the two sets are put together and then tested as a single unit, as required by law. One set would back out of its track and then double onto the dead set. The two trains together would stretch out through the interlocking, thereby effectively blocking usage of the main track.

We propose that the MBTA investigate as an alternative layover site the area between CP45 interlocking and where CP44 interlocking previously existed, as follows.

Currently the tracks are labeled from north to south as: Single Track, Middle Track (currently disconnected and out of service), Controlled Siding, Thoroughfare and #34. There is an auxiliary platform in the area between the Middle and the Controlled Siding which is wide enough to put in an additional track.

The MBTA has agreed to install a storage track along the right-of-way on the north side of the existing main, beginning at CP45, extending west 1.4 miles. This will no doubt require that CP45 be reconfigured to some degree.

We suggest that the MBTA look at the possibility of creating a layover facility of two tracks, each capable of holding two trains, in the area between approximately CP44 and the rebuilt CP45. The exact layout of the combination of layover tracks, two main tracks, and Thoroughfare and #34 would be subject to a number of different inputs and ideas which would incorporate the needs of both Conrail and the MBTA, but we believe that a little imagination and cooperation could make the proposal workable.

One proposal has been offered that would put two main lines adjacent to each other, along the front of the station with the layover tracks south of the main lines. This is just an example.

Other combinations may be more realistic. Specific plans are difficult to draw out on paper until the exact location of the platform along Worcester station is determined.

Each layover facility track in the proposal would hold two sets of equipment. Both tracks would be connected to the main tracks at both ends. If north/south expansion were necessary, there appears to be room to move #334 and the Thoroughfare tracks slightly south.

This proposal will mitigate any noise problem associated with the Mt. Carmel complex, if not eliminate it altogether. The engines will be idling in the vicinity of the Route 290 overpass for the easterly sets and 800-1000 feet further west for the westerly stored sets. Mitigation may have to be provided for the church which is southwest of the station on the south side of the tracks, but it is better to mitigate for that single building than for an entire complex.

Having access to the main tracks from the facility at both CP44 and CP45 eliminates practically all operational problems that could crop up and adversely affect the service. Each train could get out from either end and has various routes available to move east after picking up its passengers. In an absolutely worst case scenario where both main tracks are blocked between CP43 and the station, the trains could even move east through he Conrail yard, reentering the main track at CP43.

The existing station building would serve as the operating and mechanical crew building. The electrical substation could be placed under the Route 290 overpass immediately west of that building. Parking is already in place and the location is easily accessible. The need for an air compressor to charge the brake systems would be eliminated, as the noise from idling equipment would become a non-issue.

Conrail has indicated it needs as much storage space as possible in the area. The location where the facility is currently planned could be utilized for long-term storage by Conrail without having to cut out the existing slope and install a retaining wall, because the track centers would be much narrower than would be required by a layover facility.

The cost of this proposal would appear to be less than what it would cost to relocate CP44, level out the proposed layover facility, build the retaining wall and install all of the necessary equipment and buildings. At least one of the buildings is already there and the landscaping is reduced dramatically. The cost of installing a compressor is eliminated entirely.

The vast majority, if not all, potential noise complaint problems would be eliminated and operational flexibility would be greatly enhanced. It even appears that Conrail could better itself in storage capacity.

The MBTA should also look at utilizing currently unused track space on the west (P&WRR) side of the station. There is space there taken up by station tracks no longer in use. One or more trains could be stored there with the right combination of ingenuity and cooperation among the three operating carriers involved.

The MBTA should also remember that the time may very well come that they may want to operate between Worcester and Boston via the Worcester Branch to Ayer as population demographics change. Further, this branch could serve as the ultimate "bail-out" route should the Conrail main line become unusable fore more than a day. Granted, such service would be to North Station, but in an emergency it provides an alternative route to Boston for the rail service.

The proposed alternative may not be perfect. It undoubtedly has some flaws. However, the proposal, or variations on the same theme, should be given careful consideration before making a commitment to the less desirable layover facility.

Section 6.0 Environmental Impacts—Layover Facility

Parking (Interim Station)

The proposed layover facility uses a portion of the parking area currently available for commuters using the interim service. Commuters will continue to use the interim station, even after the proposed layover facility is completed, until such time as the Union Station renovation is complete. The FEIR mentions that the layover facility will require 20 parking spaces, but does not address the impact of the layover facility on the existing usage of the interim station parking.

Consideration of the layover facility's impact on parking and observation of the current parking situation at the site raise a number of questions:

- Slopes in the parking lot at the station need to stabilized. Cover should be established during the current growing season.
- The lots should be cleaned on a regular basis. There is litter and broken glass around the entire area. Sand which was spread during the winter has never been swept up.
- The old concrete stairs at the Union Station end of the site need to be repaired. The rise of the individual steps is uneven, creating a dangerous situation. Several of the steps are crumbling. Hand rails should be installed immediately.
- Lighting needs to be improved. In the fall and winter months, early morning commuters arrive in the dark and all evening trains arrive in the dark. There should be lighting installed under the railroad bridge, crossing Grafton Street. Lighting along the pedestrian corridor to all auxiliary lots and within the municipal lots should be improved. Better maintenance of existing lights is required, due to vandalism.
- Many of the meters in the municipal lots are in poor condition, and should be repaired. It is very difficult to insert coins.
- Much better signage is required, to direct commuters to municipal lots. The street system around these lots is very confusing due to the one-way streets.

  There is a small sign at the corner of Grafton and Franklin Streets, with an arrow pointing up Franklin Street (east) for Municipal Lots B, C, D and E. However, you can only access Lot B from Franklin Street. If you are driving on Grafton Street in the direction (south) from which you would actually read this sign, you could enter only Lot B. This lot does get full. In order to get to Lot C, you must then turn around, follow Franklin Street to take a left onto Harding, left onto Temple, and left back onto Grafton to get into Lot C. An entrance to Lot C from Franklin Street should be created.

  A member of the CAC was unable to find Lots D and E. Might Lot D be the Water Street Municipal Parking Lot? If so, it is one-half mile from the station, with a treacherous pedestrian route to the station. If commuters are expected to use this lot, work should be done to make the pedestrian path safer.

  Might Lot E be the Green Street lot? If so, it is at least one mile from the station. The City should be able to locate parking which is closer to the station. Perhaps some spaces could be used at the church parking lot across from the station. Also, there are spaces under I-290, to the south of Lot C (under exit ramp 14).
- Pedestrian routes from all parking lots to the station should be clearly marked. Crosswalks should be repainted. Signs should be erected to alert drivers that there is increased pedestrian traffic.
- Increased use of the station has expanded the number of cars looking for parking. When the two lots at the station fill, the overflow goes to Lot B and then to Lot C. Under current conditions, Lot B usually gets full. In the fall, when vacations are over, it is likely that Lot C

will also fill. Work should proceed immediately to provide adequate parking and safety for the fall. Further parking needs will arise when full service is implemented.

The City of Worcester and the MBTA should be directed to work these parking and pedestrian issues out as a condition of the Certificate on this FEIR.

Miscellaneous

Schedule Impacts

What is the impact on Route 126/Route 135 in Framingham with the increase from 54 to 68 daily grade crossings?

The FEIR states that Basic Service may result in minor schedule changes for train schedules east of Framingham on current commuter rail. The FEIR must analyze impacts on existing MBTA services, especially regarding air quality impact. These changes must be clearly spelled out and analyzed for air quality and cost/benefit; this should be done before construction begins on the right-of-way and potentially results in poorer service for the eastern MBTA communities.

Signaling Changes

The FEIR should also lay out the signal changes on a track chart. While not strictly environmental in nature, this information will give knowledgeable people the opportunity to review the plans for the project and comment on its content. If alterations to the changes are determined to be in order, it is better to make the changes on paper before installation than after the fact when it is far more expensive to accomplish.

RESPONSES TO CAC JULY 27, 1995 COMMENTS

RESPONSES TO CAC JULY 27, 1995 COMMENTS

Introduction

The MBTA appreciates the dedication and hard work of the Worcester Commuter Rail Citizens Advisory Committee (CAC) to date which has led to the detailed and thoughtful comments on the Track and Layover FEIR. As noted by the CAC, some of the issues which are raised in the comment letter are addressed most appropriately in the pending FEIR for Stations and Railroad Operations. Others, which pertain to the track and layover facilities, either are discussed in the following, or will be considered in the development of the required Section 61 Finding for track and layover components of the project, as appropriate. The CAC questions and concerns are responded to in the following narrative. Minor changes in the FEIR made in response to comments are referenced accordingly.

SECTION 1.0 PROJECT OVERVIEW

Section 1.1 Proposed Project

The 6 to 10 mile distance represents a typical commuter rail patron's behavior, but does not constitute a finite limit on patronage. Based on license plate surveys, there are current Framingham station patrons from many of the service area communities. The ten mile typical limit on travel puts some or all of each service area community within reach of a proposed station. Some of the outlying towns, such as Charlton and Bolton, have easier access via interstate highways, and commuter rail patrons from those towns reasonably can be expected to travel a bit farther to reach a station.

The DEIR presented the conclusion that a regional station could not be constructed within the proposed schedule for implementation of service to intermediate stations in late 1996; a regional station could require several years for environmental analyses, design and permitting. The regional station, therefore, is not part of the project proposed for construction under the current MEPA review process.

Subsequent to review of the DEIR, the Massachusetts legislature requested that a feasibility study for a regional station be conducted and a report filed with the legislature. The MBTA has committed to reporting the results of that feasibility study in the next FEIR covering Stations and Railroad Operations.

Section 1.2 History of Project

Clarification of the CAC makeup has been noted on page 1-9 of the FEIR.

Section 1.3 Permits and Approvals

The CAC has questioned the role of the CAC after completion of the MEPA review process.

It is the understanding of the MBTA that the CAC was created to assist the Secretary of Environmental Affairs in the review of the project's environmental documents prepared under MEPA. On this basis it is assumed that the CAC's role will have been fulfilled at the completion of the MEPA process. At that time, the coordination process logically would be transferred to the local communities and various permitting agencies.

The MBTA intends to use the information derived from the environmental review process under MEPA to develop contract specifications which reflect any need for mitigation related to the work to be undertaken. Where the Special Procedure has allowed the FEIR to be done in phases (i.e., track and layover work versus station construction), the MBTA anticipates developing a Section 61 Finding to be associated with each FEIR. In accordance with the Secretary's directive in the Certificate on Notice of Project Change, dated June 22, 1995, the Stations/Operations FEIR will include a separate chapter that summarizes mitigation for the entire project.

The DEP notice of construction relates to potential sources of air contamination and the EPA notice to potential sources of asbestos, such as from demolition. They are listed as possibly required, though only the DEP notice may be needed for this project.

SECTION 2.0 SELECTION OF PREFERRED ALTERNATIVE

Section 2.1 Alternatives Considered

The estimated bus costs are based on requirements for an inter-city motor coach, and are considered reasonably priced at $ 275,000 each. (In correspondence with the MBTA, Peter Pan Bus Lines has stated a value of $ 290,000 per bus). Whether the actual cost is somewhat more or somewhat less does not affect materially the outcome of the financial comparison of bus versus rail alternatives.

Regarding the assumption that the bus pick up sites would be the same as the rail station sites, the MBTA agrees that this might not be valid in all cases. Nonetheless, the point of the assumption was to provide bus access as nearly equal as possible to the proposed train access without complicating the analysis to the point of creating an "apples/oranges" comparison.

Section 2.2 Financial Feasibility of Preferred Alternative

The text of the FEIR provides full discussion of the financing of the MBTA system and the reporting of that financing on the TIP.

SECTION 3.0 PROJECT ELEMENTS

Section 3.1 Railroad Right-of-Way

The format of the project description in the FEIR is consistent with that used in the DEIR. Since rearrangement of the presentation would not alter the content, the FEIR has not been changed.

Relationships With Other Projects
The Massachusetts Highway Department routinely replaces bridges over railroads, and close coordination with the railroad operator is maintained throughout the design and construction process. Construction activities are undertaken in a manner acceptable to the railroad and others to ensure minimal disruption to schedules and operations.

Funding for track lowering is being evaluated in the legislature at the present time. It is not possible to establish a schedule for future track lowering along the corridor. When the DEIR was prepared, it was anticipated that track lowering funding would be available so the projects could be constructed simultaneously.

Table 3.1-1 has been revised to show the Fountain Street bridge in Ashland as a bridge replacement project, rather than the track lowering project shown in the DEIR. This bridge replacement is in the early stage of design, and a construction schedule has not been established.

Section 3.5 Construction Costs

The MBTA will be acquiring the layover site in fee from Conrail. Since the railroad will no longer own the site, nor have use of it, a purchase cost is necessary.

The costs of site acquisition are planning estimates, since the location of some station sites has not been finalized. Also, the site of the proposed Grafton station was already state-owned and ownership has been transferred to the MBTA..

Section 3.6 MBTA Mitigation Policy

The 2% cost policy for noise and vibration mitigation is a guideline used for project planning purposes.

The FEIR determines that mitigation of vibration by means of physical alterations to the

trackbed would be ineffective, and therefore none is proposed. The 1.2 million dollars is a planning estimate; actual noise mitigation requirements for train operations, the feasibility of mitigation measures, and the costs of those measures will be determined in the next FEIR.

The MBTA submits that the proposal to implement mitigation is a commitment to do so, subject to any further evaluation under MEPA. The actual details of implementation will be addressed in the Section 61 Finding. Also, many of the proposed mitigation measures are an integral part of the project design plans; others will be required as conditions of the permitting processes.

The definition of significant as it pertains to vibration impact is set forth in the discussion of impact criteria in Section 4.3 of the FEIR.

SECTION 4.0 ENVIRONMENTAL IMPACTS - RAILROAD RIGHT-OF-WAY

As reported in the DEIR, an architectural survey was conducted and a report submitted to the Massachusetts Historical Commission (MHC). The evaluation of the report information should be made by the MHC in the near future. Only visual impacts will occur to structures which exist along the railroad right-of-way. The majority of structures were built after the rail line was constructed over 150 years ago. Station related visual impacts will be addressed in the FEIR to follow.

The intensive archaeological survey is presently in process. Although no significant intact archaeological sites are anticipated, if any site reveals some importance in accordance with MHC criteria, a site evaluation will be performed. Based on the site evaluation it is anticipated that any positive findings would be mitigated by a salvage process.

According to the bridge survey submitted to the MHC and according to Conrail and the Massachusetts Highway Department the Route 85 bridge should not be considered as historically important.

The reference to vibration impacts on the bottom of page 4-1 has been revised to be consistent with text in the main body of the vibration analysis.

Section 4.1 Local Traffic

Ballast

Major ballast work is limited to the installation of the second track between MP 33 and MP 40.3 and the new storage track west of CP 45.

It is estimated that approximately 30,000 cubic yards will be excavated and cleaned for reuse in these areas. Testing of the existing ballast condition and depth has indicated

about 90% of the cleaned ballast can be reused on the project and the remaining 10% will be new ballast.

Staging areas are determined by the contractor. These areas will be dependent on the successful contractor's work program and available equipment. Due to the linear nature of the work and the need to provide controlled compacted raises 4 inches at a time, trucks will be used for the bulk of the work. Ballast cleaning machinery will be located in areas close to the work to minimize trucking over local streets.

Final ballasting and alignment of the track will be by Conrail after assembling ties and rail on top of the contractor-installed subgrade. Once the rail is installed, ballast will be distributed by Conrail using special rail stone cars, in conjunction with mechanized tamping and track lining machinery.

Route 85 Bridge

The bridge will have an approximately 50 foot wide roadway to handle three lanes, including a turn lane, and sidewalks. The new bridge abutments are behind the existing abutments. It is planned that the existing abutments will not be removed until the new abutments and bridge are in place, leaving the roadway accessible for the bulk of construction.

The existing track centers at the bridge are 14 feet and will not need to be widened, leaving the overall bridge structure the same width as existing.

The contractor will need to work in coordination with the restaurant as well as the grocery store. There are work areas available. Given that the restaurant operates primarily in the evening, the contractor will be able to work around the restaurant's business hours.

The issue of bridge clearance will be coordinated with Southborough town officials. At the present time, any change in clearance is anticipated to be one foot or less, and should not result in any significant increase in truck traffic. The bridge would remain a restricted structure, as the vertical clearance still will be less than 14'-6".

Section 4.2 Air Quality

The results of the air quality analyses presented in the DEIR showed that train service produced a more beneficial result in terms of VOC and CO than did bus service, while trains resulted in a net increase in NO_x. More up-to-date emission factors are available for locomotives, and results will be re-analyzed in the next FEIR. Under the old emission factors, regional NO_x for basic train service was a small net increase in kg/day; it is anticipated that the new analysis will show a significant net decrease in NO_x for basic service commuter rail operations.

Section 4.3 Noise and Vibration

Speed

In the FEIR, reference is made to track improvements that would allow for 70 mph speeds. This maximum speed will not be obtainable in all areas due to track profile and horizontal curvature. For example, maximum speeds in Worcester will not exceed 50, even with track improvements. Actual operating speeds generally will be considerably below 70, especially due to station stops. Based on the computer modeling of train performance, actual operating speeds approaching 70 miles per hour will occur only on a short segment near Route 495.

With the exception of inefficient vibration propagation characteristics identified in the Grafton area, which likely is caused by unusual geological conditions, the variations in the vibration impact distances shown in Table 4.3-2 are simply due to corresponding speed variations along the corridor. For each individual milepost segment listed, an average train speed was assigned to it and the prediction curve shown in Figure 4.3-1 was adjusted up or down according to the following relationship:

$$\text{adjustment} = 20 \times \log\left(\frac{\text{speed}}{60}\right), \text{ in decibels}$$

where speed is the average train speed over the segment expressed in miles per hour, and 60 mph represents reference speed at which the model curve is established. This logarithmic speed dependency means that doubling the train speed will increase the vibration levels approximately six decibels, and halving train speed will reduce the levels by six decibels. Based on extrapolation of the adjusted curve, the distance to vibration impact was determined for each milepost segment. The number of residential properties then were identified and inventoried within the specific impact distance shown in the table using plan maps and aerial photos of the project corridor.

The impact distances are shown to vary quite widely, even though a single impact criterion level of 80 V_{dB} was used, because of the variations in speed. Speeds ranging from 15 mph (near stations) to 70 mph were considered in the analysis, based on detailed train performance calculations. The speed of 60 mph is only used in the FEIR as a reference speed, primarily because this the highest speed at which data were available from measurements of Interim Service pass-bys.

Vibration

Because of the potential uncertainties of vibration impact, a safety factor is built into the analysis for a relatively conservative assessment of impact. This is to ensure that despite the potential for residual impacts, the levels projected in the FEIR are not likely to be exceeded once the project is underway.

The portion of the project corridor in the Town of Southborough is relatively small, comprising just over two miles of the 22.8 miles between Framingham and Worcester. Since there is a station planned in Southborough, about one-third of the two mile section will be traveled at low speeds of 30 mph or less, resulting in impact distances of less than 50 feet. Since the initial inventory of vibration impacts in Southborough yielded only one residence within the computed impact zone, further site-specific vibration measurements of Interim Service trains were not conducted in Southborough. In Ashland, Westborough, and Grafton, where many more residences were potentially affected, additional measurements were performed to evaluate potential impacts more accurately.

Commercial Property

Based on guidance contained in the U.S. Department of Transportation, Federal Transit Administration, publication Transit Noise and Vibration Impact Assessment (currently in printing; publication and release expected mid-August 1995), buildings used for commercial or industrial purposes are not considered noise- and vibration-sensitive and are exempt from consideration of noise and vibration impact. The reasoning is that prevention of interference with sleep and other sensitive activities are not considered essential elements of a commercial space such as a restaurant or store. In addition, there are no official guidelines or criteria in existence, federal or otherwise, for assessing noise and vibration impact for commercial land uses.

Based on our experience, however, restaurants and retail stores located close to MBTA commuter rail corridors (e.g., Concord, Massachusetts) in general do not experience adverse effects from noise and vibration, particularly near a station where trains will be traveling at low speed. Most property owner concerns are related to the possibility of building damage from vibration, the levels of which are much greater than those projected here.

Concerning the two commercial properties in the vicinity of the proposed Southborough Station, both buildings lie outside of the screening distance used to determine impact for residential properties. Thus, even if the existing land uses were residential, they would not be considered as impacted by vibration from MBTA commuter trains.

Impacted Structures

The data shown in Table 4.3-2 contained typographical errors that have been corrected. There are no impacted properties in Millbury, and the correct count for Worcester is three properties.

As described in the FEIR text, the determination of impacted properties was made using 1" = 200' scale maps of the railroad corridor that were developed for this project from recent aerial photography. These maps are considered to be an accurate, reliable

inventory of properties abutting the rail corridor.

There are no houses in Hopkinton within the vibration impact screening distances. The nearest house is nearly 400 feet from the tracks.

Vibration Mitigation
The FEIR simply states that standard mitigation measures (i.e., ballast mats) are not likely to be effective in reducing vibration levels due to the low-frequency content of the vibration generated by the commuter trains. From a cost and engineering standpoint, alternative measures such as floating slabs are infeasible for this project. The most practical and effective mitigation options are preventive, by regular maintenance of equipment and track to ensure that optimum conditions are maintained along the corridor. The MBTA's routine wheel trueing program is one such measure to reduce impacts below those modeled.

The vibration impact model does not take a "credit" for good maintenance. A lack of maintenance would not increase the identified impacts; rather a good maintenance program would reduce the identified potential impacts.

Bridge Construction Noise
The 1978 noise model referred to is the methodology used in the Programmatic Environmental Impact Statement (PEIS) for the Northeast Corridor Improvement Project (NECIP). This remains the most complete analysis of noise exposure specific to construction of a railroad corridor to date. Given the lack of detailed construction information available at this state of the project (specific equipment rosters, duty cycles, schedules), it is appropriate to utilize the projections made in the NECIP PEIS. These projections are based on noise levels from individual equipment measured and compiled by the Environmental Protection Agency (EPA), which provides a complete database of construction equipment noise emission levels used by the FTA in assessing noise and vibration during construction.

The nearest residence in Hopkinton is in excess of 800 feet from the Route 85 bridge site, well beyond the 200 foot screening distance used to identify possible construction noise impact.

Section 4.4 Right-of-Way Drainage

The references to culvert C-10 have been made consistent. It is a cast iron pipe.

Section 4.5 Wetlands

Reconstruction of the Route 85 bridge likely will occur simultaneously with the Southborough station, and a notice of intent for the combined construction will be

submitted to the conservation commission. It is anticipated that the normal construction mitigation measures for control of erosion will be sufficient to minimize the potential for sedimentation in the Sudbury River.

The proposed rehabilitation of tracks between MP 22 and 33 will require little, if any, disturbances to any materials that could be considered erodible. Replacement of ties where necessary and adjusting of ballast to restore track profile should not have any impact on wetland resources. The work is essentially similar to routine track maintenance. No raw earth will be exposed, and the ballast stone that would be adjusted is not subject to being eroded.

SECTION 5.0 ALTERNATIVE LAYOVER FACILITY SITES

The DEIR contained a comprehensive review of various alternative layover sites. The DEIR indicated that the preferred site, while not ideal since it was single-ended, fulfilled the major requirements. A number of other sites were reviewed and rejected for various reasons.

The alternative site presented by the CAC, while not included in the DEIR, was discussed with Conrail and rejected primarily because Conrail was unwilling to given up any real estate in their yard area.

A layover facility on this linear site would require two tracks with 21 foot centers approximately 2,500 feet long and would require shifting and removal of Conrail yard track particularly at the east end. Because the site is restrictive it presents additional problems in locating maintenance, storage and electrical facilities. These would have to be located on the station side of the tracks, necessitating a protected grade crossing across the main line for crew and maintenance vehicle access. Conrail is opposed to accepting the liability for this crossing.

In all between Conrail objections and site restrictions, this location was not carried forward.

Certainly a double-ended facility is desirable, however, this would not be the first single-ended layover on the system. Rockport and Fitchburg are both single-ended with Rockport in service for 20 years. North Station and South Station are both single-ended. Any failure on one of their throat tracks would create havoc. Even Southampton Street yard is single-ended, certainly the busiest yard in the system, and the MBTA reports only one derailment that locked up the yard in 10 years of operation. The MBTA strives to maintain their commuter rail facilities and, while problems can occur, good maintenance will minimize them.

The same applies to issues such as doubling train sets. These type of problems could occur anywhere in the system and the layover track lead at Worcester is long enough to double a train without fouling the main lines.

An advantage of the preferred site is separation of Conrail from MBTA Commuter Rail to the fullest extent, an important criteria to Conrail. Getting the commuter trains off the main tracks onto a station track or layover leaves the main tracks usable for through freights, yard switching moves and interchange with the Providence and Worcester Railroad.

SECTION 6.0 ENVIRONMENTAL IMPACTS - LAYOVER FACILITY

Parking (Interim Station)
The 20 parking spaces by which the layover facility would ultimately reduce total commuter parking spaces, is not considered to be a significant impact to the total of approximately 412 parking spaces to be offered by the Interim Station/Layover Facility plus the Municipal Parking lots. The parking demand for 1996 Basic Service is predicted to be 321 spaces for the 369 riders. Given that the demand for Interim Service has essentially reached the predicted demand, no parking shortage is anticipated.

A number of questions relative to the present parking situation, including parking lot maintenance, lighting, parking meters, signage, parking access drives and pedestrian walkways reveal concerns which the MBTA shares. They are not specifically the subject of this FEIR and not totally under MBTA control, but the MBTA is committed to work with the Worcester Redevelopment Authority and other city agencies to resolve all of these concerns:

Miscellaneous

Schedule Impacts
Gate closings at the grade crossings in Framingham, in particular at Concord Street (Route 126), will increase from the current 47 to 55 under Basic Commuter Service. Traffic problems in the area, particularly for the north-south movement along Route 126, have been well documented. With the new Interim Service from Worcester, there is a decrease in commuters who formerly drove from the Worcester area to the Framingham and West Natick stations to board the trains. The construction of additional stations between Worcester and Framingham will further decrease potential commuter demand at Framingham and West Natick. Although not yet quantifiable, a positive effect on traffic near the stations will result. A further examination of this situation will be presented in the next FEIR covering Stations and Railroad Operations.

The number of trains on the present Framingham to Boston schedule will not change,

with the exception of four new express trains added to the current schedule. Under Basic Service, it was noted that minor schedule changes could be necessary to the current Framingham to Boston scheduled trains. Minor schedule changes mean the possibility of one or more changes in the order of a few minutes, the type of change that could occur for a variety of reasons each time a new schedule is published.

Signaling Changes

Signal changes are being designed by Conrail, using Conrail standards. This design is in process and not yet available.